Parque Nacional
Reserva Marina
de Galápagos
Ecuador

MANAGEMENT PLAN FOR CONSERVATION AND SUSTAINABLE USE OF THE GALAPAGOS MARINE RESERVE.

Servicio Parque Nacional Galápagos

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GENERAL INDEX

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LIST OF PARTICIPANTS FOR THE MANAGEMENT PLAN FOR CONSERVATION AND SUSTAINABLE USE OF THE GALALPAGOS MARINE RESERVE, 1997-1998

CENTRAL GROUP
TEMPORARY MEMBERS OF THE CENTRAL GROUP
SECRETARIES OF THE CENTRAL GROUP
TECHNICAL ASSOCIATES
LEGAL ASSOCIATES
EDUCATIVE ASSOCIATES
EDUCATIVE AID
ADDITIONAL PERSONNEL FROM THE PNG AND THE ECCD
EDITOR
FACILITATORS

PREFACE

THE PARTICIPATIVE PROCESS FOR THE ELABORATION AND REVISION OF THE MANAGEMENT PLAN OF CONSERVATION AND SUSTAINABLE USE FOR THE GALAPAGOS MARINE RESERVE.

Through the official letter 1.051 of June 1997, the Ministry of the Environment granted authority for the revision of the Management Plan for the Galapagos Marine Reserve. The responsibility for the execution of this task was issued to the biological personnel. Mr Elicer Cruz, Director of the Galapagos National Park.

During the 5th, 6th and 7th of June 1997 the presence of participants selected from local guilds and institutions directly and indirectly involved in the Management and use

of the Marine Reserve was required. With the additional assistance of observers from institutions with interests in the Galapagos, a workshop was carried out to revise the Management Plan for the Marine Reserve. Several Points of consensus were made which would make up the framework for the fulfilment of the revision of the Plan. The formation of central group was agreed upon. This would ensure the continuation of the tourism sector (represented by The Chamber of Tourism and the Guide Association), the artisan fishing sector (represented by the artisan fishing cooperatives of Santa Cruz and San Cristobal), The Charles Darwin Research Station, The Galapagos National Park, DIGMER (represented by the Port Captain of Santa Cruz) and the Sub direction of Galapagos Fishing. From June 1998, the permanent members of the Central Group were: The representatives of the Fishing cooperatives of Santa Cruz, San Cristobal and Isabela, two representatives from the Chamber of Provincial tourism, two representatives from the Charles Darwin Research Station and the Chief of the Unit for Marine Resources of the Galapagos National Park as well as the occasional technical assistance from DIGMER.

In order to elaborate the management Plan for Conservation and Sustainable use for the Galapagos Marine Reserve, the Central Group worked for 15 months, summoning a total of 74 meetings, 3 workshops and 2 fishing summits. From a contextual history of antagonism, incorrect organisation and representation of different user groups as well as the perceived incompatibility of Marine Reserve users, the situation relating to Management of the Reserve changed radically from one of conflict to a consensus and collaboration.

METHODOLOGY

Participative management does not only signify the supply of ideas and discussion of regulations but also intervenes in planning and formation of rules for management and for putting it into practice. This participative process has been initiated in the Galapagos by the elaboration of the Management Plan.

The mythology of the participative process of the management Plan is based on management of co operational problems between groups of long-term antagonism. It encompasses arbitrative roles and traditional mediation. It also draws from past proposals for a participative management in protected areas made by UICN (Borrini-Feyerabend, 1996) These advocated the etablishment of an alliance between involved parties and local users in order to develop a management agreement for areas and their natural resources. The Central Group set up a forum for united meetings of local users and those with interests and/or concerns in the area who are both directly affected by the management of the Galapagos Marine Reserve.

This forum of regular meetings provided an opportunity of less official board negotiation meeting where participants could retract from fixed positions and so reach creative solutions to problems for mutual benefit. The agreements as reached by the Central Group about optimum management of the Galapagos Marine Reserve were based on previous consultations with the “Base” groups of different sectors. The whole process has involves a mix of education, training, human relations and technical decision-making. It has also included intense discussions and the understanding of how to obtain a form of management, which caters for the requirements of users as well as the requirements of conservation and protection of the Reserve in such a way that includes the fulfilment and aid of the regulations. This replaces a form of management based solely on control as was the case prior to the Management Plan of 1992.

The next step for the participative management is the implementation of the management regime and its regulations. To accomplish this, the participative process as established in the revision of the Management Plan and its institutionalisation through the interistitutional Management Authority and the Participative management Committee.

1. JUSTIFICATIONS FOR THE REVISION OF THE GALAPAGOS MARINE RESERVE MANAGEMENT PLAN

This chapter presents the justifications for the revision of the Management Plan of 1992 of the Galapagos Reserve of Marine Resources.

1.1 LEGAL AND ADMINISTRATIVE JUSTIFICATIONS

Since the approval of the management Plan of the Galapagos Reserve of Marine Resources (RRMG) in 1992, a number of actions and central processes at local and national levels have come to pass warranting the revision of this plan to ensure its effective implementation. In 1994, there were a series of meetings, which culminated in a document containing all granted agreements in order to improve management of implicated sectors and the use of the Galapagos Marine Reserve. In 1996, in the context of the Policies of Sustainable Development in the Galapagos as promoted by the government, all the consensual points of 1994 were taken into account. This presented different management options and actions, which led to the revision of the Management Plan.

Between 1996 and 1997, a number of various changes were made to the Ecuadorian administrative structure, which directly influenced the management of the Galapagos Marine Reserve. Firstly, in October 1996, the Ministry of the Environment (MMA) was established. This was assigned the role of Executive Authority for the design, planning and implementation of all Ecuadorian environmental policies. As a result, the National Institute of Ecuadorian Forestry and Natural Areas (INEFAN); was appointed the body of administration of state protected areas, which had previously been appointed the Ministry of Agriculture (MAG). In November 1996 the National Heritage of State of Natural Areas and the Galapagos Reserve of Marine Resources (RRMG) (In the category of Biological Reserve of Galapagos Marine Resources) were integrated by INEFAN. Their administration was handed over to the Galapagos National Park Service (which changed its name to Galapagos National Park (PNG) in 1995) with the coordination of other competent organisations.

On the 29th of April 1997, the acting President Fabian Alacon issued Decree No. 245 (published as official Record, Second Supplement No. 55 of 30th April 1997). It its sections relating to the Marine Reserve, the Decree created the Management Authority of the RRMG, presided by MMA and agreed by; INEFAN, the Subsecratariat of Fishing Resources (SRP) and the General Board of the Merchant Navy (DIGMER). The Inerinstitutional Commission also influenced it for Control and Vigilance (CICV). As planned in the Management Plan of 1992, it was presided by the Board of the Galapagos Fishing and a representative from DIGMER. Later, in May 1997, the leaders of the Galapagos Artisan Fishing cooperatives formed an Act of Compromise (Pact) in Front of the National Congress (9th May 1997). In this, they officially recognised the

PNG and its control and vigilance within the RMG. They also requested the continuation of control of the exploitation of fishing resources within the RMG being carried out by the National Fishing Institute (INP), the Galapagos National Park and the Charles Darwin Research Station (ECCP).

There administrative orders made the renewal and resumption of present actions, revisions and clarifications of the present and future situation of the Galapagos Marine Reserve imperative. Thus, in April 1997 the PNG with the technical and logistical help of the ECCD initiated the coordination of a local participatory progress to discuss problems and conflicts of the local users of the Marine Reserve. This carried the objective of revising the Management Plan of the Galapagos Marine Reserve. In June 1997, The Minister of the Environment, in the role of President of the Management Authority of the Galapagos Marine Reserve instructed to the Director of the PNG (in his role as President of the CICV), the coordination and continuation of this revision (Official letter No. MMA-1051-97, 13th June 1997).

Between the 5th and 7th of June the First communal talks in professional presence were in progress. All the representatives of different sectors were involved in the talks. The sectors consisted of guilds, institutes, which consider direct and indirect local users of the Marine reserve, as well as observers, and institutes with interests to the Marine Reserve. During these days, the reunion of the Management Plan was initiated. The aim was to obtain consensus points, which would implicate substantial changes in the Marine reserve management. For example, the agreement that a government institution whose basic mandate is conservation must control the administration of a protected Marine area. It should also be protected by special laws and held within a national system, which guarantees national conservation. From these structures, the institution should order protection, management and administration of the marine ecosystem. Moreover, an area of magnitude such as that of the Galapagos should be managed through a participative management force between user groups and authorities. This can only be made possible with the existence of a definitive group of users who will compromise long-term, who depend on the area and whose physical presence in the zone allows them to continue to participate in the planning, management and continuation of the protected marine area in a substantial way.

To continue the elaboration and revision of the Management Plan (based on active local participation and consensus), the central Group was formed. This group consists of members of the distinct guilds of direct local users of the RMG (as listed in Appendix 1). The Central Group also actively participated in the formation of the special Law for Conservation and Sustainable use in the Galapagos Province directed by the Ministry of the Environment. The Special Law of the Galapagos was approved in March 1998 and created a new category of Protected Natural Area. It increased the Galapagos Marine Reserve area from 15 to 40 miles and excluded industrial fishing from the area. It also established a new management and administration regime. The sixth transitory provision of the Special Law of the Galapagos dictates that the new Management Plan must be elaborated and expanded optimally in the twelve months following the declaration of this law.

1.2. TECHNICAL AND SCIENTIFIC JUSTIFICATION

In contrast to continental coast, oceanic islands represent unique historical and geographical situations. Their terrestrial ecosystems are narrowly dependent on the influence of surrounding waters. With these types of islands, the represented ecosystems have evolved in isolation and without human beings, as is the case in the Galapagos.

Changes in biodiversity in the Galapagos have occurred over thousands and millions of years. This makes these ecosystems extremely fragile entities. They are vulnerable to physical disturbances (exploitation of resources, contamination) as well as biological disturbances (introduced species) caused by human activity. These changes occur on a scale of month, years and decades. The experiences other oceanic islands indicate that the management of the costal zone and of marine resources should take into account a number of aspects. These are; special isolation and confinement, special limitations I areas of abundant natural resources (such as fresh water), natural risks, limited organic diversity, high incidence risks of endemic and unique species and the risk vulnerability of rapid and destructive changes made by external influences.

The Galapagos ecosystems cannot survive without the protection of the marine ecosystem. Many native and endemic species depend completely on the marine environment. Evolutionary and ecological processes, which occur on land, hold direct relation to the sea and sea life. For example, penguins cormorants, sea lions, fur seals and albatrosses all live on land but feed exclusively from the sea. In order to maintain the natural equilibrium between different species and to maintain their ecosystems, it is essential to conserve their food sources. As well as the biodiversity of terrestrial ecosystems, those of the marine environment represent an important system, which warrants special treatment.

In the last five years formal and informal information has been systematically complied. This information confirms that the areas in the East, South and Southeast of the Galapagos Islands know as “los bajos” correspond to the presence of submerged geographical structures (mountains or probably volcanoes), which are at a depth of more than 50 metres. Surrounding and above there structures exist particular oceanographically conditions which favour marine life, in particular the high biota productivity. As a result, in these areas there are numerous and constant gatherings of diverse biological areas which directly interact in this superficial ecosystem. There are elements from Inequent food gatherings of many species of diverse origins; pelagic and migratory (tuna, sharks and half-beaked fish) and of Marino-coastal origin (fur seals, sea lions, birds of prey, marine iguanas and turtles). Of these species, 100% are of the PNG. These terrestrial and marine species, their environment, relations and interactions form an integral part of the Galapagos ecosystems. In the zonification of the Marine Reserve as presented by the Management Plan of 1992, these ecosystems were poorly considered. Only one extension of the external limits of the Reserve was allocated for their long-term protection. The study, investigation and continuation of activities of rational use, which are developing in the role of these ecosystems as well as the function, stability and viability of the Marine reserve.

1.3. SOCIOECONOMIC JUSTIFICATION

A large proportion of the local population of the Galapagos are economically dependent on the Marine Reserve. As a result, it is necessary to ensure a balanced management between socio-economic stability of the local population and maintenance of protected marine and terrestrial zones.

The food gatherings described previously include fish species of high commercial value (tuna,). In recent years, these species have been attracting the interests of artisan and industrial fishing in local, continental and international fishing communities. The existence of there geographical formations being in relatively defend areas has facilitated increasing fishing activities concentrated in there zones where there is a clear overstrike of local and foreign interests.

One of the essential conditions, which guarantees the management, and conservation of protected areas is to permit the entry of a limited quantity of known users with long-term interests to help to control the area. The extension of the limits of the Reserve to 40 miles both concentrated management actions onto a definite group of users and created a sufficiently large bumper zone to facilitate its control. However, no unauthorised user is allowed within this zone; this is illegal.

Privileging the local fishing sector over the continental fishing sector facilitates compromise and local participation in management and conservation of their own resources in which lies the protection of their own interests. Furthermore, the possibility to exploit in a rational way these bajo ecosystems promotes the increase of local fishing concentrated in the islands and waters within the Marine Reserve and at the same time leads to the decrease of fishing activity of costal borders where most of the marine and costal biological diversity of the Galapagos is found. The expansion of the limits of the Reserve creates a big area of protection for the Galapagos marine ecosystems whose long-term existence potentially represents areas of new use and a better economic base through tourism.

It is with the new areas and new management guaranteeing the maintenance of the economic base that is the main income power for the archipelago.

2. AIM & OBJECTIVES

2.1. General Aim

The Galapagos Marine Reserves central aim of the management plan is:

"*Protect and conserve the costal & marine ecosystems of the archipelago and its biological diversity for the benefit of humanity, the local population, science and education."*

2.2. Specific objectives

Following from the general aim the specific objectives of the plan is:

a) To protect and conserve the marine and costal ecosystems of the Galapagos. To maintain the evolutionary process and ecology long-term.

b) To complement the protection of temestrial environments with components of the Galapagos Marine and coastal ecosystems and the species and communities of protected fauna flora which depend on the Marine survival.

c) To Protect important marine & costal species which are endemic vulnerable and which have important genetic, ecological touristy or animistic values.

d) To safeguard the maintenance and the preservation (or in certain cases the recuperation) of the populations of species of fishing resources which are very important for the fishing industry.

e) To help the fishermen of Galapagos to maintain and improve their social and economic bases guaranteed by the practise of fishing activities, which are compatible with the biodiversity.

f) To conserve the marine and costal ecosystems of the Galapagos as economic bases of controlled tourist activity while foreseeing and appeasing the effects and impact on the environment.

g) To provide & promote scientific activities on order to increase the understanding of the biodiversity of the marine, of the exploded sites and species and of the ecological impacts caused by human activity.

h) To provide and promote scientific and cultural education about marine and coastal nature.

i) To put into practise a management system adapted to and participating with the Marine Reserve, for which continuing data can be used. The objective for this being to modify and amend management according to new information and changing socio-economic and environmental situations.

j) To create and reinforce structures and permanent finances across the PNG in order to ensure continual functioning of a united and participatory management of the Galapagos Marine Reserve.

k) To ensure the preservation and maintenance of the scientific values of the Galapagos Marine and coastal ecosystems.

l) To establish scientific requirements and technical bases which guarantee environmental protection and conservation of the natural resources of the marine reserve & it's sustainable development.

3. LEGAL FRAMEWORK OF GALAPAGOS MARINE RESERVE MANAGEMENT

3.1 Introduction

The Legal bodies, which regulate and ordain national adjudication are:

1. Political Constitution of the Republic
2. Laws: General and Specific
3. Regulation
4. Decrees
5. Ministerial Accord
6. Resolution
7. By-Laws
8. Statue

9. Management Plan

3.1.1. Political constitution of the Republic

The supreme law of the State. A conjunction of principles of political philosophy with positive and relative standards of sovereignty, organisation, competence, functions and responsibility of the state, as well as the rights and guarantees held by individuals.

3.1.2. Law

The conjunction of judicial laws of communal application and general content with permanent obligation and coercive circumstances. For greater comprehension, the laws can be classified as general laws or specific laws.

3.1.2.1. General Laws: Those, which relate to wide aspects of social coexistence, as in the case of the Civil Code. This is a type of Law, which regulates various aspects of people's private lives such as transmission of goods, marriage, contracts, and heredity.

3.1.2.2. Special Laws: Normative bodies which regulate specific aspects of social relations. The Law of Forestry, Conservation of Natural Areas and wildlife is a special Law as it deals exclusively with the administration and use of nature.

3.1.3. Regulations

The conjunction of the judicial rules dictated for the executive function to ensure the best observation and application of Laws.

3.1.4. Decree

Processional constitutional rules or decisions relating to the constitutional President of the Republic to ensure the effective and continued exercise of legal orders and regulations.

3.1.5. Ministerial Accord

Standard proceedings for a Secretarial Minister of the State (Home Secretary) to regulate the inherent activities of his portfolio.

3.1.6. Resolution

Rules relating to the concrete application of laws and regulations or which serve to co-ordinate legal rules and regulations with institutional administration.

3.1.7. By-Laws

Special kinds of regulative bodies dictated for the Municipal Councils (Local Councils). These laws refer to special aspects of municipal life (Payment of taxes, specific contributions, use of the roads etc). Some municipals have issued by-laws relating to forestry matters (control of zones, protection of towns, forestation of parks and

avenues). Theses should be recognised and evaluated for their functions in respective districts in order to establish if they correspond to INEFAN to carry out any aspect of said by-laws.

3.1.8. Statue

The conjunction of organised and functional rules which generally regulates the existence of juridical private people.

3.1.9. Management Plan

The technical instrument, which governs management, conservation, sustainable use and administration of areas, which constitute national inheritance of, protected areas. These areas hold special characteristics and should be contained from general modes of living according to the prevailing arrangements of Article 201 of the Regulation of General Application of the Law of Forestry, Conservation of Natural Areas and Wildlife:

1. Basic Information
2. Inventory of area
3. General Audit of limits
4. Objectives of the area
5. Zonification
6. Programs of protection and management of resources. Programs of interpretation and environmental, education, investigation, of scientific continuation and cooperation and of administration and maintenance.

The above juridical-regulation is based on the mandate of Article 272 of the Political Constitution of the Republic.

1. The Constitution prevails over whichever other legal rule.

2. Other legal rules will not retain value if another mode should be in contradiction to them or alters their premises.
3. Special laws prevail over dispositions of general laws in which they deal with special terms, such as;

   3.1. In cases of conflict between laws, the special Law is applied, and

   3.2. In cases of absence of a specific, clear rule in a special Law, the rule of the general law with supplementary mode is applied

4. A rule, which foresees a legal body of judicial inferiority, cannot modify or alter a superior legal body according to the hierarchy order fixed by the Constitution.

3.1.10. Competent Authority for the Approval of the Management Plan

In the case of the Galapagos Marine Reserve, the Management Plan is approved by means of the decision of the Interinstitutional Authority of Management laid out in Article 13 of the Law of the Special Regime for the conservation and sustainable Development of the Galapagos Province.

3.2. CATEGORIES OF PROTECTED NATURE AREAS

3.2.1 Assignment of International Categories

a) **Biosphere Reserve:** Galapagos incorporated in 1985. Biosphere reserves are areas of terrestrial ecosystems and costal marines, which are internationally recognised in the Framework of the man of Biosphere Program (MAB) of UNESCO. MAB's objective is to develop a base for rational use and for resource conservation of the biosphere as well as to maximise relations between man and the elements. The reserves are nominated by national governments and have to satisfy a number of nominal conditions in order to be admitted. Each reserve should carry out three complimentary basic functions: a) conservation: ensuring the conservation of landscapes, ecosystems, species and genetic variations; b) development; promoting an economic development which is cultural as well as socially and economically sustainable at a local level; c) logistics: proportioning aid for investigation, pursuit, education and exchange of information relating to conservation terms and local national and global development.

b) **Whale Sanctuaries:** Declared in 1990. Ecuador declared the waters surrounding its slants as sanctuaries.

3.2.2. National Categories

a. Marine Reserve. The Galapagos marine reserve is one of the categorical areas of State protection, established in Article 72 of the Law of Special Regime for Conservation and Sustainable Development of the Galapagos Province, literal a).

The Galapagos Marine Reserve is part of the Galapagos province according to the definition held by the Law of Special regime for Conservation and Sustainable Development of the Galapagos Province in Articles 12, 72, lit. a) and 73.

3.3. APPLICABLE LEGISLATION

The legislation which conform to the legal framework of the Galapagos Marine Reserve are the following (the quoted articulated text is transcribed from the Appendix III):

3.3.1. Political Constitution of the State

Official Record No.1 11th August 1998.

Constitutional text determines collective rights and guarantees, to the right of possession of a healthy environment (Article 23, num.6); the principle of conservation and protection in favour of the environment and the sustainable management of natural resources (Article 86); and the principal precaution of responsibility which establishes

the obligation of the State and its delegations and concessions to pursue and ensure its effective fulfilment.

Moreover, The Constitution establishes ecosystems, biodiversity and the entire genetic heritage of the country as protected judicial goods. This predetermines the principles of systematic protection and conservation of the protected areas of Ecuador.

The Special Regime conceded by the constitution for the Galapagos Province aims to put into effect all the constitutional principles of protection for Protected Natural Areas of the Province which includes the Galapagos Marine Reserves (Article 238 and 239)

3.3.2. Law of the Special Regime for the Conservation and Sustainable Development of the Galapagos Province.

Law No. 67. Official Record No. 278 18th March 1998.

Article 2. " The Special Regime establishes that the activities of political establishments, planning and execution of public and private work in the Galapagos Province and in the area which constitutes the Galapagos Marine Reserve are regulated by the following principles;

1. The maintenance of the ecological systems and biodiversity of the Galapagos Province, especially those that are native and endemic. At the same time allowing for the continuation of the evolutionary process of these systems with and underlying minimal human interference. While particularly taking into account the isolated genetics between each island of the archipelago and between the islands and the continent.

2. The sustainable development and control in the framework of support capacity in the ecosystems of the Galapagos Province.

3. The special participation of the local community in development activities and a use of sustainable economics in the ecosystems of the Islands. This fundamentally includes the incorporation of special models and standards of production, education, training and employment;

4. The reduction of the risks of introduced diseases, pests and species of plants and animals which are exotic to the Galapagos Province;

5. Quality of living for residents of the Galapagos Province should correspond with exceptional characteristics of Humanity Inheritance;

6. The examination of existing interactions between inhabited zones and protected terrestrial and marine areas and for such the necessary integrated management; and

7. A precautionary principle applied in relation to work and activities that could harm the environment and ecosystems of the islands.

The legislation that derives from this law includes the scientific and technical requirements, which ensure environment protection, conservation of natural resources and sustainable development.

Finally, the establishment of the special regime holds the power of practical realisation and specification of each and every development activity in the Galapagos Marine Reserve.

The Law of Special Regime for Conservation and Sustainable Development in the Galapagos Province establishes new authorities in management material for the Marine Reserve: The Interinstitutional Authority of Management of the Galapagos Marine Reserve (Articles 13 and 14); The United Participative Management (Article 15 final clause) and special consultancies of the Consultant Committee (Article 48) and the Charles Darwin Foundation (Article 5). The Interinstitutional Authority of Management affirmed state obligations regarding the political definition of sustainable development for the Marine Reserve of the Galapagos (in the participative and adaptive management framework). The Participative Management Committee constitutes one of the principle applications of participative management as defined in Article 73. This implies responsibility, privileged participation and adaptation of local users duly organised in alliance with Sate Authorities.

The Law of Special Regime for Conservation and Sustainable Development of the Galapagos Province Board determines that the Board of the Galapagos National Park exercises jurisdiction and competence over the management of natural resources and coordinates interinstitutionalism with final control (Article 15 first clause).

3.3.3. Law of forestry and Conservation of Natural Areas and Wildlife

Law No. 74 Official Record No. 64 24th August 1981.

The Law of forestry and Conservation of Natural Areas and Wildlife establishes relative regulations for natural areas and wildlife. These include their administration and the principles of conservation of provided resources in these areas.

The Galapagos Marine Reserve is a Protected Nature Area forming part of the National Heritage. Natural Areas of the State, according to this law, include the whole marine zone within the area of 40 nautical miles along the base line (recorded by the Executive Decree No. 959-A 28th June 1971, published as Official Record No. 265 13th July 1971). This includes the column of water, marine bed and subsoil.

3.3.4. Law of the Creation of the Institute of Ecuadorian Forestry of Protected Areas and Wildlife, INEFAN

Law No. 8 Official Record No. 27; 16th September 1992.

The Institute of Ecuadorian Forestry of Protected Areas and Wildlife, INEFAN was created to execute legal responsibilities relating to conservation of natural areas and wildlife as determined in the Law of Forestry and Conservation of Natural Areas and Wildlife and General Rules of Application (Article 2 of the mentioned Law).

The General Rule of Application of this Law was issued by Executive Decree No. 408 published in Official Record No 105 12th January 1993.

3.3.5. Special Law of Tourist Development

Official Record No. 118; 28th February 1997.

The Galapagos Marine Reserve is a natural area with a number of developing activities. One of these is tourism, which is subjected to special requirements.

The Special Law of Tourist Development establishes that tourist activities in legally protected nature areas are directed according to basic principles and criteria of protection, conservation and sustainable use of resources. It additionally devotes the application of educational criteria to visitors about the ecosystem of the area. Priority of touristy activity directed towards nature and awareness (Article 37)

Furthermore, the developing tourist activities of the Marine Reserve fall under the jurisdiction of the Special Regulation of Tourism in Protected Areas (Article 45 Law of Special Regime in Galapagos). At the time of the elaboration of the Management Plan of Conservation and Sustainable use for the Galapagos Marine Reserve, this was part of the inventory of regulations. These regulations were required in order to apply the orders of Law of Special Regime for the Conservation and Sustainable Development of the Galapagos Province.

3.3.6. Law for fishing and Fishing Development

Law No. 178 Official Record No. 497 19th February 1974.

The requirements of the fishing Law in Specific relation to the Galapagos Marine Reserve are uniquely applied as supplements in the case of a fault with the regulation of the Special Law for Conservation and Sustainable Development of the Galapagos Province (Article 14 and 72 lit.c of the Law of special Regime for the Galapagos). This applies even though the province and its protected natural areas already have a special regime established in the political Constitution of State and Law.

3.3.7. Maritime Police Code

Coded 23rd March 1960 including reforms.

The Maritime Police Code determines jurisdiction, competence and rules regarding personnel of the Maritime police and National Merchant Navy. It establishes regulations for registrations, requisites, transactions, procedures as well as for private crafts and public services.

This legislation holds special regulations referring to beaches, bay zones (under national authority), jetties and maritime traffic. It also provides legislation referring to offences and proceedings of establishment.

The Maritime police Code contains principles and regulations applicable to accident prevention and maritime natural disasters as well as to control and prevention of contamination of the coast and national waters.

3.3.8. General Application Rules of the Law of Forestry and Conservation of Natural Areas and Wildlife

Executive Decree No. 1529 Official Record No. 436; 22nd February 1983.

The General Application Rule of the Law of Forestry and Conservation of Natural Areas and Wildlife relates to regulations of the Forestry Law such as the effective development of application of the basic objectives of the law, permitted activities, requisites for action and proceedings, the administrative system and possible users of Protected Areas.

This Law establishes a method of application of the administrative sanctions, jurisdictional competences and the procedures for technical administrations. It also contains general provisions of minimal restraints acting on the management Plan.

4. MANAGEMENT PRINCIPLES FOR THE MARINE RESERVE

These principles are fundamental guidelines, which aid decision making in the Marine Reserve Management and in the use of resources to ensure their sustenance. These principles are international and are not subject to hierarchic order.

a) PRINCIPLE OF ALLOCATION
(Article 15 clause 1, Law of Special Regime for Galapagos)

This principle consists of the allocation of a principal authority whose primary objective and function is environmental protection and conservation. In this case, this refers to the Galapagos marine Ecosystem.

b) PRINCIPLE OF RESPONSIBILITY

The distinct management strategies of human activities in the Marine Reserve are based on obligatory and responsible compromise. This compromise relates to aims of interests , objectives and principles of the protected area. It also takes into account the narrow ecological relations between terrestrial and marine systems as well as complementary conservation actions. For these actions, resources are used in a way, which is ecologically sustainable, socially justified and economically profitable.

c) PRINCIPLE OF PARTICIPATION
(Articles 2, 3 and 15 clause 3, Law of Special Regime of the Galapagos)

The resources, which are found within the Galapagos Marine Reserve, are limited. As a result, in order to ensure effective management, these resources are classified into acquainted groups and limitations of users with clear long-term interests. The physical presence of these groups in the Galapagos allows for the continual participation in the planning, formation of legislation and

implementation of decisions relating to environmental resources of the Galapagos Marine Reserve. As well as co-ordination with agencies, which hold jurisdiction over the protected marine area.

d) PRINCIPLE OF ADAPTIVE MANAGEMENT
(Article 15 clause 3, Law of Special Regime of the Galapagos)

Actions of protection and conservation within the Marine Reserve should be adaptable to changes, which occur over time in users and natural environments of the Galapagos or preceding availability of new information, which prompts modifications of management. Adaptive Management also responds to unforeseen situations or information. It is based on a plan, which anticipates pursuit systems and which defines criteria and conditions to vary management following the results of pursuits.

e) PRINICPLE OF PRECAUTION
(Article 2, clause 7, Law of Special Regime for Galapagos)

To foresee damage of the Galapagos ecosystems and the deterioration of the economic bases of its users. The precaution establishes that in the presence of incorrect or insufficient information concerning possible problems of environmental impact, the decision, which holds the minimal risk of direct or indirect damage to the ecosystem, is taken.

f) PRINCIPLE OF SUSTAINABILITY

All users, activities and decisions about the foreseen resources of the Galapagos Marine Reserve should be oriented towards the maintenance of the biological biological diversity and the evolutionary process of marine and costal species in such a way that it permits a regeneration of species and reasonable use. This use should strengthen options of species and reasonable use to satisfy basic, realistic needs for socio-economic development and quality of life for future generations without destroying the ecological base.

All decisions, activities and management systems in the Galapagos Marine reserve have to be long-term maintainable.

g) PRINCIPLE OF SOCIO-ECONOMY

The rational and sustainable use of foreseen resources of the Galapagos Marine Reserve should be aimed at the improvement of general living conditions. This specifically relates to social well-being and the satisfaction of groups with legally established users.

h) PRINCIPLE OF INTEGRATION

Every proposal or decision relating to management or administration of the area of the Galapagos Marine Reserve should be considered in relation to the unification of an integrated management as well as to the interests of specific sectors which can neither prevail over this principle nor effect its management and administration.

5. HUMAN USES OF THE MARINE RESERVE

this chapter contains a description and history of the Marine Reserve; it is not legislative.

1. Artisan Fishing
2. Marine Tourism
3. Science
4. Military Strategies and Navigation

5.1. Artisan Fishing

Fishing started in the Galapagos with whale and fur seal hunting at the beginning of the 19th Century. The Colonialisation of the islands from 1832 saw the start of rudimentary uses of marine resources slowly more experienced fishermen started to penetrate the sea and fishing probably started to take form as daily full-time work for some fishermen during the 19th century. This form of fishing was however using boats without motors with which the fishermen could gain small and barely sufficient salaries.

Industrial fishing. This type of activity has existed in the Galapagos for a number of decades carried out by both national and international industrial fleets. Ships from Japan, USA, Panama and Costa Rica primarily have been operating in Galapagos waters in search of tuna. The presence of these fishing ships represented a form of frequent communication, supply and business/commerce for the colonies during the 1940's and 1950's. Nonetheless these industrial fishing operations were furtive and clandestine. From the beginning of the 1950's, the example of the central argument for the declaration of 200 miles of territorial water for exclusive economic use to support Ecuador, Peru and Chile with the creation of the Permanent Commission of the South Pacific in 1952 Ecuadorian purse seine and long line fishing boats have only been operating in the Galapagos since the beginning of the 1970s. In 1985 Ecuador started a program, which accommodated associated foreign boats (principally from Japan and Taiwan) permitting them to long line fish under the national flag in Ecuadorian waters. This program was terminated in 1996.

5.1.1. History of Galapagos Artisan fishing. The establishment of the North American Naval Base in Baltra around 1940 promoted local economic development. As a result, the fishermen of Santa Cruz and San Cristobal began to concentrate on selling fresh fish to fleets. By the end of the 1940's, fishing in the Galapagos was no longer merely a means of sustenance but had become a commercial activity. The foundation of the Galapagos Fishing Society (referred to locally as "La Predial") in Puerto Baquerizo brought about a fundamental change in the form of 1,000 t. capacity refrigerator. Huge fretwork boats could now moor in the recently constructed port. The presence of ten 30foot yachts initiated a new era in Galapagos fishing. The first Ecuadorian tuna fishing boat, The Rose Marie carried toward the production of costal fishing on the Continent together with tuna captures.

Due to bad management , "La Predial" was abandoned around 1955. New impetus came in the form of two north American industrial ships, Lucy and Jane which

were harvesting fresh fish from the beginning of the 1970`s. The risk of rapid accumulation was introduced to a great extent by the new fleet, which developed over a number of years. Around 20 units measuring 30 feet around San Cristobal during the first years of the 1970`s. between 1970 and 1972, the Galapagos saw a huge increase in fishing production when huge crafts sailing under the Panama flag (Beatriz, Codiakk, Chicuzen Maru, Patao) were drawn to the Galapagos to buy fishing products. Fishing activities became less intensive during the 1980`s given that developing tourism was involving a number of Galapagos residents who had previously been working in the fishing industry.

Until the middle of the 1980s fishing in the Galapagos had been continuing at a basic level without alterations. The exception to this was lobster fishing which had been sophisticated with the introduction of the use of compressed air from diving technology. It was also during the 1980`s that the fishermen started to organise themselves into cooperatives. The majority of fishing was centralised into three types of resources: fresh fishing for local consumption, lobsters for international exportation and dried or salted fish for consumption in Continental Ecuador. The most exploited species of fish were mullet and cod. Nonetheless in the last 15 years new fisheries have been opened. Of these the most important have been that of sea cucumbers and tuna in waters far away from the the coast. Until 1998, this important economic activity was extracting hundreds of tonnes of resources, maintaining a work force of around 600 people. This cooperatives were using a fishing fleet of approximately 270 crafts including boats, fibreglass boats and canoes.

5.1.2. Basic Definitions

5.1.2.1. Galapagos Artisan Fishing. Fishing activity carried out by artisan fishermen who are legitimate established cooperatives. Fishing as daily livelihood, using fishing skills/methods and boats as laid out in this plan, which will be defined later.

5.1.2.2. Galapagos Artisan Fisherman. A native person who works habitually in fishing, already in a pedestrian form as a captain or crewmember of a artisan fishing craft as defined in the Management Plan.

5.1.2.3. Galapagos Artisan Fishing Craft. A fishing boat which meets and abides by the given requirements in the Management Plan and which is used solely and exclusively for artisan fishing in the Galapagos.

5.1.2.4.Galapagos Artisan Ship owner. A native person or one with a legitimate and registered cooperative who meets the requirements laid out in the Management Plan. Proportion artisan fishing craft which comply with the given sizes, tonnage and capacities dictated by the Management Plan.

5.1.2.5.Galapagos Fishing Skills. Fishing artefacts, implements and tools, which fulfil the criteria, definitions and standard users as, laid out in the Management Plan. These implements are used only by Galapagos Fishermen with the aim of extracting hydro biological resources from the Galapagos Marine Reserve.

5.1.3. Classifications and Uses

5.1.3.1. Fishing

5.1.3.1.1. According to the geographic operation range, fishing can be grouped into the following;

> **a) Costal fishing.** Fishing activities, which are conducted in the zones situated close to the coasts of distinct islands across the Archipelago Platform.
>
> **b) Deep fishing.** Fishing activities, which are carried out in open waters, which are normally deep.

5.1.3.1.2. According to economic use, fishing can be classified as follows:

> **a) Non-Commercial fishing.** Fishing activity carried out sporadically and in waters surrounding inhabited ports. It is for recreational aims and self-consumption. This type of fishing is part of the customs and traditions of the Galapagos inhabitants and its commercialisation is forbidden.
>
> **b) Commercial fishing.** Extractive fishing activity, which is carried out as a means of permanent or sporadic work with profit, aims as well as commercial fishing activity that is internal or self-consumption. According to the Management Plan, any level of commercialisation or significant interchange of fishing products for money, objects or services will be considered as commercial.

5.1.3.2. Fishing Skills and Methods

The fishing methods used in the Galapagos can be classified into four types. These are: lines and hooks, nets, diving and collection.

5.1.3.2.1. Lines and Hooks. This method of fishing involves one (or a number of) principal lines. These lines can be made from distinct materials (polypropylene, polyrene, nylon, Dacron, trilene, etc) with varying diameters. Lines are fixed with iron or stainless steel hooks (singles, doubles or triples) and generally has a lead weight at the end. Within this group of skills is an extensive and varied range:

5.1.3.2.1.1. Hand Line. This consists of a nylon line and hook used with a stationary boat. Usually line bait and no weight is used.

5.1.3.2.1.2 Splicing. Consisting of a nylon line or rope to the end of which is attached a twisted wire with one or a number of hooks and bait. Sometimes, the wire is divided into two sections. A weight consisting of an iron tube filled with lead is placed at the end of the central wire. The weight can be varied according to the required fishing depth. Draw of this is divided into three groups:

> **a) Deep Splicing.** Relates to direct stationary deep use fishing of specific species such as; cod, grouper, scorpion fish, wrasse, grey thread fin bass, white fish, bass, red snapper, etc..

b) "Bolita" or light Splicing. Uses lead balls as weight, the amount of which depends on the force of the current. A light attracting the fish to the bait is attached. Principally used in San Cristobal and mainly used for night fishing.

c) Middle water Splicing. In neither deep nor open waters with bait which generally corresponds to integral and living species. Many using anchored or drifting boats capturing tuna and half beaked fish.

5.1.3.2.1.3. Drag. Fishing method conforming to use of line, hook and weight with principal difference that a moving boat drags the live through velocity and depth. Line and dead bait is used as well as a range of artificial bait (spinners, feathers, squid, octopus) to attract the fish. The main type of fish involved is pelagic.

5.1.3.2.1.4. Long Line. Using a long line to which are attached at intervals a number of hooks with bait. Conducted in open waters along a marked drift with various buoys as well as flag markers, and lights.

5.1.3.2.2. Nets. Fishes are trapped or encircled by linked or mesh nets with different openings. The nets are made from dacron, perlon or nylon and other various filaments. They vary in size (length and width) and are generally used in shallow waters. They can be moved by boats or by foot. There are two types of nets:

5.1.3.2.2.1. Inactive nets; grill nets and trammel nets. Nets, which are deployed in a fixed position between tides in which fish are trapped while trying to cross over.

5.1.3.2.2.2. Active nets which are netted and enclosed. Thrown and displayed nets, which are used by people or boats for special objectives. These nets usually have small mesh sizes and are divided into two groups:

a) Closed artisan beach nets. Deployed by people who want to fish in shallow waters around the shore, and

b) Closed artisan nets. Their sizes vary considerably (by 10s of metres) and are deployed in open, deep waters operated by a main ship with a service of a canoe. These nets are mainly used to capture mullet, gilt, mackerel, milkfish, sea bass, and bait (sardines, brown stripped snappers).

5.1.3.2.3. Diving. Method of fishing a diver submerges himself to capture mostly invertebrate species. This is divided into two categories:

a) Diving with compressed air. The diver gets air from a pipe, which feeds compressed air from a compressor, which is held on a boat. The diver can remain submerged for long periods of time (hours). This in generally in waters which are less than 20 metres deep. This skill is primarily for catching sea cucumbers and lobsters. With Lobsters, as well as using his hands, the diver may use a Hawaiian rod and hook.

b) Skin diving with free air. The diver uses only his lungs and deep breaths. Mainly to capture species of invertebrates such as lobsters, sea cucumbers and octopus.

5.1.3.2.4. Harvesting. Method of fishing involving the manual capture of inertial marine invertebrate species which become accessible during diurnal or nocturnal low tide. Mainly for octopus, chitins and crabs, among others.

5.2. MARINE TOURISM

5.2.1. History of the Galapagos Marine Tourism

Directed tourism with regulations and itineries as laid out by the Galapagos National Park started operating in 1969. From the start, a combination of activities was offered such as sea and land visits as well as snorkelling amongst others. Tourist activities of this time were carried out using artisan-fishing boats, which were later adapted to become exclusively tourist boats from the very outset, the focus has been on an informative and educative tourism

Traditionally, tourists visiting the Galapagos Islands have held much interest in the immense biological diversity, which is found in the terrestrial environments of the Galapagos. From the beginning of the 1980's, however, the submarine environment also started to attract attention as a destination for professional sports divers, diving naturalists, snorkelling (surface) and SCUBA. As a result of the first dive cruise being opened to the public in 1973. From 1988, the number of boats offering diving tourism started to increase. Now, there are several operating tourism companies, which are almost completely dedicated to SCUBA diving. These are becoming an important feature for the modals of tourism for diving and Bay tours.

The Galapagos Islands have several diverse characteristics, which make them a notable diving destination. Amongst these is the immense diversity of habitats and species due to a unique combination of oceanographic characteristics such as beaches surrounded by deep water, the emergence of cold waters, strong currents and the effects of El Niño as well as the unusual mix of marine organisms as a result of the convergence of distinct masses of waters and their representative biology's. It follows that species originating from extremely diverse geographical environments such as tropical, subtropical and moderate reside in the Galapagos.

The Galapagos diving tourism has increased significantly in the last few years as the Galapagos is one of the few places on the planet where it is still possible to dive with marine species that are neither afraid of humans nor attack them (the possibility of diving with schools of sharks for example). For this reason and those mentioned above, the Galapagos has been declared one of the best submarine sites in the world by the prestigious oceanographic organisation; CEDAM International.

5.2.3. Basic Definitions

5.2.3.1. Aquatic Tourist Activities

a) Commercial Tourism. Activities carried out by a native or legislated person who has been approved to offer a tourist service to clients in exchange for remuneration.

b) Recreational Tourism. Leisure or sport activities without costs performed by natives who are visitors or residents.

5.2.3.2 Models of Aquatic Tourism

a) Directed Tour. Activities of tourist visits to the Galapagos National Park and Marine Reserve carried out by tourist boats in which the passengers sleep. This activity is standardised and legislated by the Management Plans of the Galapagos National Park and Marine Reserve:

b) Daily Tour. Activity of tourists' visits to the Galapagos National Park and Marine Reserve carried out by tourist boats on which the passengers do not sleep. These boats always return to a inhabited port. This activity is standardised and legislated by the Management Plan of the Galapagos National Park.

c) Bay and Diving Tour. Activity of tourist visits to the Galapagos National Park and Marine Reserve carried out by tourist boats in which passengers do not sleep. These boats always return to an inhabited port. This activity is standardised and legislated by the Management Plan of the Galapagos National Pak as in the Management Plan of the Marine reserve.

5.2.4. Uses

5.2.4.1. Snorkelling (free or skin). Form of free diving performed with the help of a snorkel (breathing tube) and mask, which permits underwater vision. The diver continues to respire while submerged.

5.2.4.2. Kayaks. Type of canoe with a capacity for one or more persons, which is powered by paddles or oars.

5.2.4.3. SCUBA Diving. Tourist activity performed to enable the observation of underwater environments. Divers can remain underwater for extensive periods of time (minutes to hours) with the help of a system, which essentially uses a BCD (Buoyancy Control Device), a weight belt, tanks of compressed air and a regulator. SCUBA stands for self Contained Underwater Breathing Apparatus.

5.2.4.4. Surfing and Wind Surfing. Sporting activities which require a surfboard or to sail board to slid/surf across the breaking waves. The sailboard counts for additional propulsion and speed.

5.2.4.5. Sailing. Sporting activity performed by a boat equipped with sails for its principal propulsion and power.

5.3. SCIENCE

5.3.1. History of Marine Science in the Galapagos

The Galapagos has been known as a destination for scientific research since the publications of the works of Charles Darwin after his visit in 1835. Following from these, there were several expeditions of marine scientists primarily concerned with

collecting species to identify and classify (Hopkins Stanford Galapagos Expeditions 1898-99; Allan Hanrock Pacific Expeditions 1932-38; and W. Bebbe, 1924). Marine Science and its application in conservation started to increase after the formation of the Charles Darwin Foundations (FCD) in 1959, its operative branch; The Charles Darwin Research Station (ECCD) in 1964 and the Galapagos National Park which came into effect in 1972.

The objective of the FCD/ECCD is the pursuit of studies ensures the preservation and continuation of the Colonial Archipelago and its surrounding waters, flora and fauna. This includes the conservation of the ground (soil) as well as safeguarding the lines of wild species in their natural environments.

Of all the relevant conservation studies of the marine area, the work of the scientists George Wellington stands out. Between 1973 and 1975 he assisted the PNG and the ECCD in evaluating the marine resources of the Galapagos environment. Wellington's report recommended establishing a marine park and extending the protection zone to the waters surrounding the islands.

During the 1980's, the majority of marine investigation (apart from visiting scientists) was in the creation of a conjoined convention between the National Fishing Institute (INP) and the ECCD. This interinstitutional relationship produced more than 30 jobs destined to create scientific bases for the management of exploited resources in the Galapagos. In the same way a cooperative working relationship between the Oceanographic Fleet Institute (INOCAR) and the ECCD was brought to light in the area of investiture oceanography.

The contributions of DR. Gunter Reck, which focused on the study, and management of most valuable species for artisan fishing; cod (mycteroperca olfox) and lobsters (Panulius penicillatus and P. gracilis) until this date, haven't been repeated. These studies together with those developed by the INP and collaborating with the fishing and tourism communities carried out ECCD. Investigates of fishing for alternative resources as well as tests of new skills, tools and methods of fishing have been carried out by the INP in Galapagos waters. Squid fishing, fishing for small pelagic species (mackerel) and deep-sea fishing have all been involved in these experiments. In 1986 the Ecuadorian government established the Reserve for Marine Resources in the Galapagos Islands. This came as a result of the important studies carried out by local and international scientists. This has, in turn contributed to recognition of the marine world in addition to the islands' fame on a global level.

From 1994, investigations have been increasing and the highest proportion of information has been in the areas of management, conservation and protection. Within the most important studies, the emphasis lies on abundance and distribution of Marine biodiversity, identification of zones for priority protection, plans for continuation and ecology of various species which are have been exploited as economic resources, and the pursuit of environmental natural and an tropical changes which affect costal and marine ecosystems. The bioprospection or search for bioactive substances with biotechnological capacities in Galapagos flora fauna has been activated during the last decade by foreign institutions. This type of scientific use, without embargo, has been extremely restricted as there are still no guarantees nor clear legislation of the potential economic benefits for Ecuador.

Another important contribution to this sector has been the formation of special national scientists in the marine sector. This has helped to mediate volunteer and bursary programs of the ECCD and PNG as well as the use of the Marine Reserve as an educational resource through the inclusion of children and students from local schools and publications for public distribution. In addition, contributions have been made by

film producers and visiting scientists some of which have carried out long-term studies in the Archipelago. The processes of appropriation and permits for marine investigations have traditionally been dealt with by the PNG. Since 1996, the participative process of planning and discussion of the Management Plan has generated a substantial increase of information relating to the Galapagos Marine Reserve. This information holds great potential as an educational resource for future development.

5.3.2. Basic Definitions

5.3.2.1. Science in the Galapagos. Corresponds to the study and description of natural artificial phenomena. These are carried out through investigative systems of verification as applied in scientific methodology. The essential objective of science in the Galapagos is to increase knowledge of the ecosystems and natural processes as well as the effects of human actions in the archipelago. This is in order to ascertain intrinsic values and consequential effects. In addition, science seems as a tool to aid the management of the Galapagos Marine Reserve as well as acting as a constant source of information for environmental education and interpretation.

5.3.3. Uses

5.3.3.1. Pursuit. Sequential and systematic form of collection of qualitative and quantative information and observation and observation of natural and artificial processes. The pursuit includes the continuation of species, communities and human activities. This includes an aim to describe their dynamics, determine changes as well as to identify causes, consequences and natural effects of human activities on the ecosystems.

5.3.3.2. Environmental measurements of physical and chemical parameters. Activities, which are evaluated by a systematic form with environmental characteristics, monitored over periods of time. These activities include atmospheric measurements (rainfall, pressure, ratification), oceanographic measurements (water temperature, salinity, productivity, sea level, tides) and geographical measurements (rock types, gases, seismic action).

5.3.3.3. Experimentation. Manipulation of species, species groups or communities as well as conditions and physical or chemical variables in order to verify a work hypothesis. Experimentation is generally carried out through the manipulation of various special scales/measurements (centimetres to kilometres) and time (hours to years). This is in order to observe the behaviour of species, communities, ecosystems, as well as changes in environmental variables and physical chemical conditions over periods of time and space.

5.4. MILITARY NAVIGATION AND MANOEUVRES

5.4.1. History of Military Presence in the Islands

The Ecuadorian fleet has been present in the islands since the 1920's as a result of the Galapagos by the Constituent Assembly. After this, the Galapagos area was converted into a Naval District and by Executive Decree No. 192 (14th February 1958), it became The Secondary Naval Zone, a title that it still holds today. Military jurisdiction is held in

the whole insular area by the Port Captains of Puerto Baquerizo Moreno, Puerto Ayora, Seymor and Puerto Villamil as well as the checkpoints of Floreana for the control of the maritime area and the zone of influence of this island.

The presence of the fleet has guaranteed the safe operation of vessels (including those for fishing and tourism). It has since across the Oceanographic Institute maintained and installed aids for navigation, beacons, buoys, given advice relating to the directions of television and radio medias as well as to equip the marine with nautical maps.

The II Naval Zone continues to execute operations of Search and Rescue (SAR). This complies with the functions of the Central Search Coordinator of the insular region, issuing aid to search sub centres and in doing so, safeguarding the lives of those who work in the sea. Aero marine Exploration and Surface Exploration carry out operations of; Reconnaissance, Vigilance, Patrol, Search, Identification and Pursuit. Logistic vessels of the Ecuadorian fleet cooperate in supplying the Insular Region as well as instructing officials and crew of the marine guard ships.

The Board of the Merchant Navy across its flagships serves according to and carrying out established legislation by guaranteeing navigation in its respective areas.

Through special civil medical action, the Ecuadorian fleet collaborates in the well-being of populations who are more remote and more in need of essentials.

The Ecuadorian Air force is present in the Galapagos; San Cristobal and Isabela with headquarters in Baltra, Puerto Villamil. It is in charge of control and operation of the airports in these areas.

5.4.2. Basic Definitions

5.4.2.1. Search and Rescue (SAR). Defined as the employment of available personnel and facilities prepared to assist people and properties in peril.

5.4.2.2. Rescue Coordination Control (RCC). Centre engaged to provide the organisation of the Search and Rescue service and to execute SAR operations within corresponding areas.

5.4.2.3. Rescue SubControl (RSC). Subordinate central coordinator of rescue established to reinforce the function of RCC within a specific region of search and rescue.

5.4.2.4. Aero maritime Exploration (EAM)/Surface (ES). Vigilance and observation carried out in air zones and surface areas in the marine area. Its purpose is to gather evidence of groups carrying out illicit activities.

5.4.2.5. Reconnaissance Operation. The gathering of information concerning illicit activities through observation and other detective methods.

5.4.2.6. Vigilance. Systematic observation of Maritime areas with the purpose of locating, identifying and determining movements of groups involved in illicit activities.

5.4.2.7. Patrol. The systematic and continued vigilance using aircraft with surface units concerning the maritime area. These are areas which groups carrying out illicit activities have to travel across in order to avoid the intersection checkpoints without detection.

5.4.2.8. Search. Vigilance using aircraft and surface units with the purpose pf proving the presence of contact within a well defined area, which backs up prior suspicious information about the area, and so actual positions and intentions are discovered.

5.4.2.9. Identification. Operation to determine the classification of one or several contacts.

5.4.2.10. Pursuit. Operation to maintain permanent control over one or several contacts. The efficiency of pursuit is measured by the capacities of methods to obtain and report information.

5.4.3. Uses and Classifications

5.4.3.1. Naval Operations in the Archipelago. The Ecuador Fleet continues to perform working operations such as; Salvage, logistics, community aid, instruction, maintenance, control of illicit sea activities, as well as continuing with many other objectives under its command.

5.4.3.2. Aid Operations. Operations previously interinstinstitionally applied, now carried out by the Ecuadorian fleet to enforce laws and regulations.

6. MARINE RESERVE ADMINISTRATION AND MANAGEMENT

This chapter defines the responsibilities of the Interinstitutional Management Authority of the Galapagos Marine Reserve and Galapagos National Park (Technical Secretary). It also defines alliances and levels of local participation and responsibility of direct use by the Committee of Participative Management.

6.1. INTERINSTITUTIONAL MANAGEMENT AUTHORITY (AIM)

The Interinstitutional Management Authority is the maximum directive collegiate body responsible for policy definition relating to the Galapagos Marine Reserve. In virtue of its legal attributions, it holds the power to approve plans and remaining technical instructions, to authorise participative studies and generally define, superior and evaluate the fulfilment of Law of Special Regime for Conservation and Sustainable Development in the Galapagos Province, in the marine reserve.

6.1.1. Integration. The Interinsitutional Management Authority includes the following members:

1. Minister of National Defence, or his delegate;

2. Minister of National Defence, or his delegate;

3. Minister of Foreign Commerce, Industry and Fishing, or his delegate;

4. Minister of Tourism, or his delegate;

5. The Provincial Chamber of Tourism of the Galapagos Province;

6. The Artisan Fishing Sector of the Galapagos Province;

7. The Conservation, Science and Education Sector of the Galapagos Province.

a) Working in the capacity of the Director of Technical Secretary of the Galapagos National Park;

b) The principal delegate, or other members of the commission should work for their respective institutions while holding permanent residency in the Galapagos Province;

c) Members of AIM are subject to its own internal regulations and Laws.

6.1.2. Functions of the Interinstutional Management Authority.

The functions of the Interinstitutional Management Authority of the Galapagos Marine Reserve are the following: *(Article 14, Law of Special Regime for the Galapagos)*

a) Establish policies for the Galapagos Marine Reserve which uphold principles of c
Conservation and sustainable development;

b) Approve or refuse the Management Plan of Conservation and Sustainable Use for the Galapagos Marine Reserve;

c) Oversee and ensure the fulfilment of the Plan;

d) Distribute assigned resources of the Marine Reserve and any other conformity admission of priority for the Management of the zone;

e) Summon public and private institutions when their participation is required.

f) Approve or reject the fishing calendars, permitted fishing skills, species, volumes and dimensions in the Galapagos. Counting on the advice of the National Consultancy of fishing and fishing Development;

g) Authorise participative studies of investiture science mostly focussing on policies of conservation and development for marine fishing.

6.2. ADMINISTRATION OF THE GALAPAGOS MARINE RESERVE

The Board of the Galapagos National Park’s objective is the administration and management of the Marine Reserve of the Galapagos Province. It exerts jurisdiction and domain control over the management of natural resources in the zones. Based on the principle of participative and adaptive management the Board of the Galapagos National Park holds as its main objective the coordination, elaboration and supervision

of management, conservation and sustainable use plans for the Marine Reserve. It also involved with the elaboration of other policies and plans.

The Technical Secretariats of the Galapagos Marine Reserve and Galapagos National Park holds the following coordinated actions;

a) National Navy: to control and patrol. The National Navy must provide necessary personnel for the fulfilment of control and patrol activities. Port activities are the principal responsibility of DIGMER across respective Port Captains.

b) Sub secretariat of Fishing Resources: to ensure the correct use of Marine resources. The Sub secretariat of fishing Resources assigns inspectors who check that appropriate technical implements are being used and that captured species are legitimately permitted. This ensures the long-term conservation of these resources.

c) National Fishing Institute (INP)/Navy Oceanographic Institute (INOCAR): To carry out continual programs of investigation and pursuit. The INP and INOCAR complement and aid labour in the Area of Marine Investigation and Costal Conservation of the Charles Darwin Scientific Station. They also promote new investigation camps which appropriate management decisions can be reached.

For the efficacy of participative management of the Galapagos Marine Reserve, decisions are made as follows:

1. The sector proposes the idea

2. The Participative Management Committee analyse and decide the viability and practicality of the proposals.

3. The Galapagos National Park or the Interinstitutional Management Authority approves or rejects the proposal.

6.3. PARTICIPATIVE MANAGEMENT COMMITTEE (JMP)

The Participative Management Committee is the application of participation of users of the Galapagos Marine Reserve which in alliance with the Board of the PNG (Technical Secretariat of The Marine Reserve) hold as a main objective participation and responsibility of all the users involved in the management of the area.

6.3.1. Integration

The JMP consists of the following representatives of direct local users of the Marine Reserve or their delegates:

1. The official representative of the artisan-fishing sector, elected from the four presidents of the Galapagos Artisan Fishing Cooperatives, or their delegate.

2. The representative of the Chamber of Tourism, or their delegate.

3. The representative of the Charles Darwin Research Station or their delegate.

4. The representative of the PNG or their delegate.

a) All the representatives of the JMP must fulfil all the respective internal procedures of participation and representation of their sectors before being credited. The fulfilment of these procedures guarantees complete representation and participation of the base users in decision-making;

b) Each sector may count on other individuals and experts to advise and /or to participate in the extended internal process; without embargo, these advisors may only discuss and advise in decision making; and

c) Establishment of criteria and procedures to identify and integrate new members to the JMP. These criteria and procedures are approved or rejected by AIM.

6.3.2. General functions of the JMP

The functions of the JMP are as follows:

a) Analyse and propose specific subjects for the Galapagos Marine Reserve to the Board of the PNG. These subjects should not interfere with the jurisdiction of AIM nor should AIM, INGALA or any other institution delegate them;

b) Participate in the evaluation of efficacy of the Plan according to a program of evaluation a fulfilled implementation of the Management Plan, as established herein;

c) Analyse and propose modifications of the Management Plan

d) Aid the revision of the Management Plan

e) Evaluate and vigil ate the fulfilment and continuation of the Management Plan

f) Identify necessary technical support needed for decision-making and discussions;

g) Analyse and propose the revision of the zonification of the Marine Reserve

h) Ensure the terrestrial and marine integration of the Management Plan;

i) Ensure the continuation of studies of environmental impact of activities within the Galapagos Marine Reserve (RMG);

j) Revise and analyse results of studies carried out in the RMG on environmental impact and propose recommendations;

k) Coordinate the participation of RMG users through programs and subprograms of management and support in the Management Plan;

l) Promote the development of educational and scientific users of the Marine Reserve;

m) Analyse and propose new activities;

n) Design and propose systems and procedures for the qualification of new users and methods within the Galapagos Marine Reserve; and

o) Participate in the improvement expansion and proposals of reforms of laws and regulations relating to activities and uses within the Galapagos Marine Reserve.

6.3.3. Specific Functions of the JMP

6.3.3.1. Fishing:

a) Define criteria and procedures to analyse and propose definitions of fishing methods and skills as well as definitions, qualifications, tonnage and capacity of the boats;

b) Analyse and propose fishing methods, skills, tonnage and capacity of boats based on the criteria laid down by the Management Plan;

c) Identify the necessities of continuation and investigation, analyse the results and propose recommendations;

d) Analyse and propose to the Management Authority fishing calendars, volumes, dimensions species and methods permitted in the Galapagos based on the information obtained by programs of investigation and continued presentation of the Management Plan or from other relevant sources;

e) Analyse and propose degree of use (capacity of cargo);

f) Form, recommend and propose programs and projects considered in the program management section of the Management Plan in order to improve the sector;

g) Analyse and propose methods and mechanisms of commerce and transport;

h) Analyse and propose new methods and activities;

i) Analyse and know the result of continuing fishing; and

j) Analyse and propose participative methodology for collecting basic information on fishing.

6.3.3.2. Tourism

a) Identify the necessity of continuation of investigation, analysis and results and propose recommendations;

b) Analyse and propose rates of intensity and frequency of use;

c) Form, recommend and propose programs and projects in the section of management and administration projects of the Management Plan in order to improve and increase the section;

d) Analyse, revise and propose itineries of dive sites;

e) Search for mechanisms to unify marine and terrestrial tourism use;

f) Propose mechanisms for the granting of permits; and

g) Participative with the Consultancy Committee in the planning of tourist activities with the participation of the local community. This is according to Article 48 of the Law of Special Regime for Conservation and Sustainable Development of the Galapagos Province.

6.3.3.3. Educational Aid:

a) Identify and evaluate participative educational aid directed at those implicated in the Marine Reserve;

b) Participate in the coordination of education programs on a provincial level concerning the management and conservation of the Marine Reserve.

c) Promote the execution of programs and projects as given in the programs and activities section of the Management Plan;

d) Design, fulfil, evaluate, propose, aid and implement communication and information systems within the JMP and its bases to ensure and guarantee the participation and representation of each sector;

e) Participate in coordinating conservation courses for the users of the Marine Reserve; and

f) Create broadcasting procedures for the contents and decisions of the Management Plan discussions and put them into action.

6.3.3.4. Control:

a) Participate in the expansion of control and patrol system policies; and

b) Evaluate the fulfilment and efficacy of the reglementation and control system of the Management Plan.

6.3.3.5. Science

a) Participate in the elaboration of policies relating to scientific investigation in the Galapagos Marine Reserve; and

b) Promote scientific investigation in the RMG

6.3.4. Decision making procedures of the JMP

All decisions or managerial changes in the Galapagos Marine Reserve are based on principles defined in the Management Plan.

The Jmp may only take decisions relating to specific functions as laid out in the Management Plan.

All resulting decisions within the JMP are made by consensus.

The decision making process by consensus is the following:

1. Presentation of proposal on behalf of the sector.

2. Analyse and discussion of the proposal in the JMP.

3. Decision
If a consensus is not ultimately reached, the proceedings continue by the following mechanisms:

- Meeting for first consideration of the proposal.

- Meeting to resolve disagreements and conflicts.

- Meeting for the final decision

- If there is still no consensus, the conflicting proposals are submitted to the consideration of the interinstitutional Management Authority.

The decisions made within the functions of the JMP must be channelled by the Board of the Galapagos National Park, the Interinsitutional Management Authority and/or by the relevant institutions in order to be approved according to their functions and should be expressed in the Special Law of the Galapagos.

The Board of the Galapagos National Park, as the administrative body of the Marine Reserve, with jurisdiction and competence, may approve decisions of proposals taken by the JMP provided that they don’t interfere with the jurisdiction of Interinstitutional Management Authority nor the same authority hey has delegated that. The JMP’s decisions which have been approved by the Board of the

Galapagos National Park must be announced in each Interinstitutional Management Authority of the RMG meeting.

The Board of the Galapagos National Park may approve some JMP decisions which, within their functions, propose certain modifications of the Management Plan. These modifications cannot be substantial, nor can they distort the objective as stipulated and approved by the Interinstitutional Management Authority can resolve the matter.

All decisions related to proposals for managerial change in the Galapagos Marine Reserve are based on principles of Participative and Adaptive Management.

The JMP must pursue the following stages in order to establish its proposals of criteria, conditions and continuation and investigation systems as bases from which management of the RMG can be varied:

1. Identify priorities of continuation and investigation for management

2. Identify types of necessary information, criteria and indicators to vary management; those which are approved by the PNG and AIM.

3. Identify roles, responsibilities and work methods relating to continuation and investigation.

4. Broadcast the results of investigations to each sector.

6.3.5. JMP Consensus default

There occasionally are exceptional circumstances relating to decisions of RMG administration and management. These are cases of natural events or situations where rapid action is needed, not allowing time or possibility to gather a meeting of the JMP, or if in such a circumstance, a meeting ends without a consensus. In there circumstances, the Galapagos National Park at its discretion and under its direct responsibility may decide immediate methods and actions of management, control, prevention and direct mitigation.

In whichever case, the Galapagos National Park's decision must be executed and submitted to the Interinstitional Management Authority of the Marine Reserve who may either ratify it or order its modification.

7. ZONIFICATION OF THE MARINE RESERVE

7.1. CONSIDERATIONS

The zonification of a protected area is a management measure to organise different uses and is required for the following:

- To standardise and regulate human activities and direct uses which coexist in the same geographical zones and present conflicts of distinct and different objectives;
- To obtain conservation and protection of biodiversity and to ensure the sustainability of economic activities in the RMG; and
- To enforce the principles of Article 2 of the Special Law for Conservation and Sustainable Development for the Galapagos Province as well as with the general aim and specific objectives of the Management Plan.

The zonification established here is not rigid but rather the contrary. It is subject to changes according to necessities and circumstances which appear. It can be reformulated to conform to the best fulfilment of objectives of the Galapagos Marine Reserve. Zone changes can be proposed by the JMP or by the Board of the PNG and approved by AIM only on a base of technical criteria and always for the best management of the Marine Reserve.
In the PNG zonification, the main part of the Marine Reserve is for shared use between fishing, tourism, Science and education. This is duly regulated and controlled. The conservation of the RMG depends on the sizeable measure of good management of this huge area of multiple use. It has been demonstrated worldwide that in order to conserve biodiversity as well as to optimise and sustain economic use of ecosystems, it is essential to have areas without extractive use. To ensure benefits of the biodiversity such as the reproduction of fishing resources and tourist use, these areas must be of an adequate size and must be permanent. These areas are divided into different classifications. In some, non-extractive use is allowed for scientific use and protection of the biodiversity, no economic use; neither of fishing nor tourism forms is permitted. Zonification should by no means be considered as complete. In recent years, a great deal of information about the biodiversity and the coastal water s of the Galapagos had been gathered and collected. This information also concerns tourist priority sites. The fishing sector holds information about fishing sites which have not previously been studied or tested. From worldwide experiences, it is undoubtedly important to have knowledge of optimal sixes for district zones. This is in order to ensure that an adequate base exists from which a zonification scheme approximately of an optimal level may be reached. The possibility of increasing zones at a later date if so required is also important as part of adaptive management policy. The ideal zonification for productive fishing should include permanent zones of non-extractive use. These zones should be sufficiently large to protect the habitats and significant populations of marine organisms.
Processes of awareness, education, training and strengthened gilding must accompany the introduction of permanent zones of non-extractive use. These are necessary to enforce an intensive fulfilment and study of the effects of zonification. A new regime of management is also required for an ecological plan as with socio-economic changes. In case of certain fishermen being negatively affected in the short-term, they should be given priority to participate in training programs of development of alternative economic sources. The implementation of training, education, surveying and alternative developments are carried out by respective programs of management as laid out in the Management Plan. From these antecedents, as defined above, follows the form of zone categorisation and the adaptive process of zonification.

7.2. ZONE CATAGORIES

7.2.1 Multiple Use Zone

In these zones, multiply uses are developed which hold distinct regulations defined by the Management Plan. These activities include fishing, tourism, science, conservation, navigation and manoeuvres (Patrol, SAR, etc.). These activities are standardised and regulated by the Management Plan and by the resolutions and regulations of the PNG which are based on the proposals at the JMP and AIM. This zone consists principally of deep waters located inside and outside the Base Line.

7.2.2 Limited Use Zone

In these areas, the above-mentioned uses are subject to further restrictions. These restrictions have the purpose of protecting environments, resources and activities which are important or notably sensitive to alterations and changes. These zones consist of the costal areas which surround each island, islet or protruding rock which are above the water surface or located in shallow waters (typically less than 300 metres). These zones include the Bajos. There are three sub zones for zone 2.

7.2.2.1 Comparison and Protection Sub zone

These zones serve as test areas (or control areas) for measuring the effects of human use. They are areas for studying biodiversity and ecology as well as assessing human impact, climatic changes and global environmental changes. They are also areas which ensure the conservation of biodiversity and sustainstainabilty of all of the uses of the Marin Reserve. In these zones, only scientific study and education are permitted. Neither extractive use nor touristy use is allowed.

7.2.2.2. Conservation and Non-extractive Use Sub zone

The principle non-extractive use is aquatic tourism but science, conservation and education are also included. In this sub zone all or some to a degree of the following activities are permitted; snorkelling, diving, canoe trips and whale observation from boats. These specific non-extractive uses are controlled and may be modified according to the characteristics and circumstances of each location.

7.2.2.3 Conservation, Extractive and Non-extractive Use Sub zone

Extractive use includes artisan fishing, navigation, education, science, tourism, patrol, SAR and military manoeuvres. Certain uses may be subject to additional controls such as regulations relating to fishing methods and operations. In contrast to the Multiple Use Zone, these regulations are due to the fact that these activities are conducted on the coast and in fragile zones where the susceptibility of environmental impact is much greater. These additional controls and regulations vary according to the sensitivity of the location, the condition of exploited resources, necessity for other users, etc..

7.2.2.4. Areas of Special Temporary Management

Established zones may be declared as temporary special zones managed with experimental or recuperation goals. Their extension may be defined in each case by the given sector which is then approved by the AIM.
Each zone may have sub zones to control, permit or restrict certain activities. These sub zones are as follows:

a) **Experimental Subzone.** Temporary sub zone category. This is a zone which is run by a special management regime for experimental purposes. This category plays an important role in the process of subzonification of Zone 2. Members of the Artisan Fishing Sector of the Galapagos are included in the distinct study phases. The study of the behaviour of species in experimental areas of different zones contributes to the general knowledge of marine and costal species of the Galapagos Marine Reserve.

b) **Recuperation Sub zone.** Temporary sub zone category. These are areas within any zone (1, 2 or 3), which have degraded for some reason (over-exploitation, contamination, physical damage by tourism, storm damage or El Nino, for example). The JMP may declare and delimit a recuperation zone with complete protection and/or special regulation and rules to aid its recovery. The designation of a recuperation zone is maintained until the JMP revokes it. Members of the Galapagos Artisan Fishing Sector are involved in the distinct phases of survey with specific situations of marine and costal species of the Recuperation Areas in different zones of the RMG.

7.2.3. Port Zone

In this zone, the range of uses allocated in Zone 1 is modified according to requirements. These specific requirements relate to uses of a port for the surrounding population. They are established in relation to rules, which are not necessarily dealt with by the Management Plan. This zone corresponds to the waters surrounding the five ports of the archipelago (Puerto Ayora, Baltra, Puerto Basquerizo Moreno, Puerto Velasco Ibarra and Puerto Villamil).

7.3. ZONIFICATION PROCESS

7.3.1 Identification and Delimitation of a Provisional Zone

Provisionally identified and delimited as sub zones 2.2 and 2.3, experimental zones or recuperation zones. In experimental zones, no economic, or touristy or fishing use of any kind is permitted. This is not as defined for zones of 2.1. The process of identification and delimitation of sub zones includes certain activities carried out by representatives of all the zone users. These activities are: definition of criteria to identify sub zones, analysis and identification of the different sites on maps, visits to the site to confirm its identification and delimitation. In provisional identifications, the following is taken into account:

a) Information about biodiversity distribution and identified priorities for conservation;

b) Identified priorities for users, including economic used both extractive and non-extractive;

c) Areas considered important in ensuring the sustainability of all the users of the Galapagos Marine Reserve;

d) Ecological factors which determine appropriate sizes for each zone;

e) Distribution of zones 2.2 and experimental zones which make up a representative network;

f) Short and Long-term costs and socio-economic benefits of the zonification;

g) Known geographical characteristics which facilitate identification and recognition for users of zone limits; and

h) The need to experiment with areas of distinct size and characteristics so as to produce an extended information base for definition of future zonification.

Availability of technical substances and detailed maps for provisional zonification is presented in a zonification project to the AIM to be approved or rejected.

7.3.2. Management Phase for provisional zonification

For a period of two years from the primary approvement of provisional zonification, the Marine Reserve manages its implementation scheme.

According to what is considered necessary, the JMP may create, complete or modify recuperation zones. However provisional zones of 2.2. And 2.3. Categories and experimental zones must be maintained without substantial change for the entire two-year period.

During this period all sectors are dedicated to ensuring that the management of each zone is carried out in accordance with its category. It is also necessary to collect information about initial effects (ecological, social and economical) of the new management system. Data considered necessary includes, effects on biodiversity, natural resources, touristy value, fishing production, fishing effort and activity, economic value of fishing, positive and negative effects on social groups and the functioning of the ecosystem. Also considered are continued activities, opinions and knowledge of distinct user groups.

During this period, all the sectors and institutions are dedicated to facilitating awareness and acceptance of the concept of zones without extractive use and the establishment of an optimal zonification scheme. Efforts should be dedicated to parallel processes of capacitating and education (as described in the above considerations). One of these actions is to channel resources. These resources are known as a result of depth surveys carried out by the Charles Darwin Research Station.

7.3.3. Definitive Zonification

In 2001, at the end of the two-year period will present to the AIM a report on the initial effects of zonification with recommendations for future zonification and specifically for the next two years. The AIM will modify the provisional zonification taking the report into consideration. If it is considered appropriate, the AIM will decide the total or part definitive zonification. As part of their decision, the AIM will establish zones of category 2.1. And will cancel all or some of the experimental zones in 2.1, probably but not necessarily holds a relation with the location of experimental zones established in 1999. This is a result of them having profited from two beneficial years for biodiversity, reproduction of resources, etc. Without embargo, decisions taken on location and size of all the sub zones depends on the analyse presented by the JMP in 2001 based on results of continuation and investigation.

For the elements of zonification, which haven’t been decided upon in a definitive way, a base management of provisional zonification for a further determined period maintains them. At the end of this period, another evaluation is made, the base of which decides the definitive zonification of these pending areas. When zonification is definitive, a continuing process maintains it. However, evaluation and revision of

zonification is included as part of the periodical evaluation and revision of the whole management plan.

It should be noted that certain effects of zonification become apparent only after decades or in an ecological reaction to an exceptional phenomenon (for example, extreme El Niño the introduction of foreign species, recuperation after a petrol spill, etc.)

8. REGULATIONS

This section contains rules that govern the use of the Galapagos Marine Reserve.

8.1 ARTISANAL FISHING

8.1.1 Regulations

In order to define the characteristics of different types of craft and methods of fishing a technical diagnosis should be used. For this, a process to determine specific definitions is carried out:

- A fishing diagnosis should be performed to evaluate actual and potential methods of artisan fishing in the Galapagos and to establish a process to define tonnage and capacity of the artisan boats.

- Participating in this diagnosis would be the artisan-fishing sector in the Galapagos, the Sub secretariat of Fishing, the General Board of Fishing, INP, PNG, ECCD and consulates.

- The results of the diagnosis would be presented on the 30th March 1999 and will form part of the Management Plan.

8.1.1.1 Permitted Fishing Methods in the Galapagos Marine Reserve

a) Line fishing

b) Fishing with decoy and bait

c) Diving with compressor and tank and skin diving

d) Artisan fishing nets:

- Mesh string nets surrounding the beach
- Atarraya and hand made nets
- Artisan enclosure nets

8.1.1.2 Permitted Fishing Methods, which are Subject to Special Regulations

a) Long Line fishing

b) Hawaiian Rod fishing

c) Artisan fishing nets

- Transmallo or Enmalle
- Agallera

8.1.1.3 Prohibited Fishing Methods in The Galapagos Marine Reserve

a) Fishing using explosives

b) Fishing using chemicals

c) Oceanic fishing nets and drift fishing

d) Transmallo with the exception of those that have been included in the diagnosis definition

e) Underwater firearms

8.1.1.4. Activities Only Permitted on Fishing Craft

a) As well as those concerned directly with artisan fishing, the transportation of passengers between populated ports and zones of the Galapagos National Park is permitted following authorisation from DIGMER and the Galapagos National Park respectively.

8.1.2. Requirements

8.1.2.1.1 Requirements to be an Artisan Fisherman in the Galapagos

a) Have permanent residency; and

b) To be an affiliate of one of the legitimate cooperatives formed before the constitution of the Special Law for the Galapagos (18th March 1998).

8.1.2.1.2 Requirements for Artisan Fishing within the Galapagos Marine Reserve

a) To be registered with DIGMER; and

b) To hold a PARMA (Artisan Fishing of the Galapagos Marine Reserve) license which has been authorised by the National Park.

8.1.2.2 Requirements for Artisan Fishing Craft in the Galapagos

a) Size of artisan fishing craft in the Galapagos is defined and based on technical studies carried out by DIGMER and INP. These studies are based on previously established fishing diagnostics and definitions as mentioned earlier;

b) To be equipped only with permitted tools and equipment;

c) Have a valid DIGMER traffic license and have correct and sufficient security equipment on board;

d) Be correctly registered with the fishing cooperatives; and

e) Be in the Fishing Register

8.1.3. Registration System, Licensing and Permits for Artisan Fishing

a) **Artisan Fishing Statistic Register.** A true and effective number of fishermen boats and fleets, which is added to by information supplied by the fishing cooperatives and DIGMER. The Board of the Galapagos National Park, which is also responsible for the updating, and customisation of the register keep this in archives.

b) **PARMA License** (license for Artisan Fishermen within the Galapagos Marine Reserve). This license is issued to artisan fishermen by the Galapagos Nation Park in order for them to undertake legitimate fishing within the Marine Reserve. To obtain this license, every fishing cooperation has to send an application and the following information to the Galapagos National Park:

1. A certificate issued through the cooperative to which the fishermen are affiliated.

2. Identity card copy.

3. Residency permits copy.

4. Copy of Cooperative membership.

4. 2 passport size photographs.

c) **Artisan Fishing Permit.** This is the permit that the Galapagos National Park issues to artisan fishing boats in order for their development of legitimate fishing activities within the Galapagos Marine Reserve. To obtain this permit, every fishing cooperative has to send an application and the following information to the Technical Secretariat of the RMG:

1. DIGMER registration number.

2. Previous fishing permit.

3. Traffic license.

4. Copy of Identification documentation.

5. Copy of Residency documentation.

6. Voting certificate.

7. 2 passport size photographs.

8. Registration in the Fishing Register.

8.1.4. Transportation and Commerce

The implementation of a technical study justifying the establishment of regulations of transport and commercialisation of fishing products is to be carried out by the Galapagos Province. Legislation concerning external commerce and existing arrangements with other countries also requires revision. Participating in this plan: The fishing sector and its associates, the PNG and the Fishing Sub secretariat.
Not until the study has been carried out and and presented with appropriate solutions to AIM which will approve new resolutions will the new valid regulations of transport and commerce be put into practice.

8.2. MARINE TOURISM

8.2.1 Regulations

In order to operate tourism in the Galapagos Marine Reserve, boats with capacities of up to 16 passengers and a maximum 5-year warranty and boats with capacities from 16 to 100 passengers with a one-year maximum warranty must be equipped with the following:

1. Oil and water separator.

2. A tank for untreated water with a manual and automatic handling system for water purification.

3. Solid waste shredder.

4. Requirements as stipulated in the valid security regulations as established by DIGMER.

8.2.1.1 Permitted Tourist Activities in the Galapagos Marine Reserve

a) Diving.

b) Swimming.

c) Snorkelling.

d) Kayaking.

e) Collection and trips in wooden boats (pangas).

f) Surfing.

g) Sailing.

h) Sport Fishing.

8.2.1.2 Prohibited Water Activities in the Galapagos Marine Reserve

a) Water Skiing.

b) Jet Skiing, Water Scooters and other similar activities.

c) Other uses of motorised appliances, which could impact the environments and aesthetics of the islands as established by the Participative Management Committee.

d) Tourist fishing activities or fishing from tourist boats.

8.2.2 Methods of Diving and other Aquatic Tourist Activities

One can dive and practise other forms of tourist aquatic activities within areas, which have been allocated by the Galapagos National Park. The National Park determines diving itineries and legislation relating to the use of different dive sites. These activities are being performed under the following methods:

8.2.2.1. Bay and Diving Tour. Recreational activities, which are being practised in harbour zones and within a range of, permitted sites. These methods are not implicated with live aboard boat passengers, and land visits should be carried out according to the regulations of the Management Plan established by the PNG.
Bay and Diving Tours are divided into three subcategories according to characteristics, equipment, and capacities. The three categories may include land visits and snorkelling.

a) **Class 3: Bay Tour**. This class does not include SCUBA diving activities. Operations of land visits are carried out within sites of recreationally populated sites as laid out in the Management Plan of the PNG. Snorkelling can be take place inside a definite range in the recreational sites and in the outskirts of the respective ports which have been laid out in the Management Plan by the PNG.

b) **Class 2: Bay and Diving Tour**. Land visits should be carried out inside recreational populated sites, which have been allocated in the Management Plan of the PNG. SCUBA diving is included in the permission. Diving activities should be carried out inside the allowed range by the recreational populated sites and diving sites in the outskirts of respective ports, which are all set out in the Management Plan of the PNG and in the Management Plan of the Galapagos Marine Reserve.

c) **Class 1: Bay and Diving Tour**. Land visits should be made inside recreational populated sites, which are set out in the Management Plan by the PNG. SCUBA diving activities are permitted. These should be made in sites, which are laid out by the Management Plan of the Galapagos Marine Reserve. The transportation of passengers between populated ports is permitted if in possession of authorised DIGMER permits.

The system to grant and authorise the use of this method of activity is established by the Special Law for Tourism in Protected Areas.

8.2.2.2 Directed Tour. Regulations are to be established for diving during Directed Tours in the Special Law for Tourism in Protected Areas.
The JMP is getting involved in the production of this special regulation.

8.2.3 Requirements

8.2.3.1 Requirements to be Able to Offer Tourist Diving. Cruise Ships that offer diving should comply with requirements which are stipulated in the valid security regulations established by DIGMER and also with the security regulations established for diving activities as laid out in this Management Plan.]

8.2.3.1.1 Human Requirements

a) A PNG licensed guide with international diver master license should be provided for every 8 divers.

b) Registered with DIGMER.

c) Trained personnel in using and maintaining compressors and primary dive equipment. All this equipment should fulfil requirements of international maintaince and inspection.

d) Minimal tourist diving capacity levels: present valid international Open Water Dive license.

8.2.3.1.2 Materials

a) Equipped with primary aids and communication equipment.

b) Equipped with sufficient oxygen in order to take an injured diver back to port.

c) In the case of lager ships, a smaller boat is required to be on standby for every dive guide.

d) International dive flag present on places of immersion.

8.3 SCIENCE

8.3.1 Regulations

8.3.1.1 Permitted Scientific Activities

a) Investigation and continuation of biological and socioenvironmental processes.

b) Environmental measurements using physical, chemical and biological parameters.

c) Bio technical and Ambiotechnical experimental management.

d) Collection and taking of samples.

e) Conservation.

8.3.1.2 Prohibited Scientific Activities or Those Subject to Special Regulations

a) Bio exploration studies are permitted to be carried out if the impact on the ecosystem in minimal and if there are guarantees and appropriate benefits according to the Galapagos National Park's criteria.

b) Mining exploration: looking for minerals for commercial exploitation.

c) No ethical manipulation or abuse of living organisms.

d) Transplantation or change of species between islands.

e) Undertaking of studies, which have no justified ecological impacts of scientific or practical value.

8.3.2. Requirements

a) Institutions and Individuals can carry out scientific research in the Galapagos Marine Reserve if they have authorisation from the PNG and if it is conceded by the technical and scientifical criteria of the respective departments on the PHG, FCD and other organisational bodies or people that have been consulted; and

b) All visiting scientists must submit two copies of their preliminary reports to the PNG and ten copies to every separate employee of the FCD. For publications, two copies are to be donated to the ECCD library and other copies should be distributed amongst other educational institutions and scientists in the country.

8.3.3 Permits

All marine scientific activities are subject to the same established procedures and are examined in an investigation program and continuation of the Galapagos National Park Management Plan 1996.

8.3.3.1. To Undertake Continuation Studies and Investigations

8.3.3.1.1 In order to undertake scientific investigation in the Galapagos Marine Reserve, it is necessary to obtain authorisation from the Board of the Galapagos National Park that approves or rejects studies on an evaluation basis with the following considerations taken into account:

a) Possible impacts on the ecosystems, native species and evolutionary processes.

b) Methodology and technical quality of the proposed study.

c) Benefits for conservation and socioeconmical welfare and or training; and

d) Promotion of knowledge and awareness of biodiversity.

8.3.3.1.2 The performance of a continuation study and/or scientific investigation implies a compromise between the scientists and the Galapagos National Park. The following orders are incorporated into this:

a) National legal legislation and the special Galapagos National Park stature.

b) International agreements relating to such matters.

c) Proposals on which the JMP have dictated and ruled.

d) Resolutions of the Galapagos National Park.

8.3.3.1.3 Scientific pursuit and investigative studies must be carried out according to the following precautions:

a) Minimalism impact in areas of pursuit and investigation.

b) Respect the proposed and authorised boundaries.

c) Coordinate with the rest of the users of the areas of pursuit and investigation. If necessary, this includes investigating cases in visitor and fishing sites.

8.3.3.2 Collection

8.3.3.2.1 In order to authorise the implementation of scientfical collections from the Galapagos Marine Reserve it is necessary to obtain authorisation from the Galapagos National Park Board. They will approve and grant this according to the consideration of the following aims:

a) Taxonomical identification.

b) Education; or

c) Investigation

8.3.3.2.2 In the case of collection of blood or tissue samples, it is necessary for the scientist to sign a commitment contract with the PNG and FCD. This is to clearly state that the downer of these samples is the PNG, which assures the correct use of large storage facilities.

9.MANAGERIAL PROGRAMS

This chapter describes the programs, subprograms and their activities in this order. Four programs have been defined for the implementation of the administration and management of the Galapagos Marine Reserve. These programs may nonetheless be increased by the AIM if considered necessary.

9.1 Management and Administration Program
9.2 Investigation and Continuation Program
9.3 Control and Vigilance Program
9.4 Environmental Education and Communication Program

9.1 MANAGEMENT AND ADMINISTRATION PROGRAM

This program is designed to guarantee the optimal management and administration of the Galapagos Marine Reserve. This is achieved through unsettlements of effective aid to the other programs. It is also achieved through close coordination, elaboration and supervision of the Management Plans and operating plans concerning the conservation and sustainable use of the Galapagos Marine Reserve. The results of this program are to be orientated around guaranteeing good management of use of natural resources. This serves as an innovative tool for participative management. Decisions made by participative management have to be approved by the Board of the Galapagos National Park. Relevant subjects that are being dealt with by the JMP without being decided by consensus will be channelled to the International Management Authority or any other suitable institution. The main purpose of this program is to achieve an adequate and coherent management of natural resources in the Galapagos Marine Reserve. It is also to allocate budgets to assigned protected areas. Necessary human resources should also be accommodated through technical coordination, legal consultancy and legislation. The program also deals with the trail and establishment of sanctions of committed offences within the Marine Reserve. These are specified in the Galapagos Marine Reserve's Management Plan and the Law of Forestry and Conservation of Natural Areas and Wildlife and in the Law of Special Regime for Conservation and Sustainable Development of the Galapagos Province.

- **General Aim of the Program**

To guarantee optimal administration and management in the Galapagos Marine Reserve. This is achieved through fulfilment and execution of the present Management Plan.

- **Specific Aims of the Program**

    1. To achieve a working efficiency through internal feedback. This improves the training and efficiency of the personnel. To guarantee

further recruitment through selection of the optimal as indicated in this Plan,

2. To achieve an interinstitutional coordination to ensure an integrated management,

3. To coordinate development of participative management,

4. To ensure that all decisions, actions and procedures of the Marine Reserve administration are aligned with policies, principles, standards and rules. These are maintained by the Law of Forestry and Conservation of Natural Areas and Wildlife and the Special Regime Law for the Conservation and Sustainable Development of the Galapagos Province and the respective applications of these regulations,

5. To coordinate a development with all management programs mentioned in this Plan,

6. Assure an appropriate financing of the Galapagos Marine Reserve. To coordinate transactions for budget increases by contraction of personnel and implementation of necessary expenditure revenues,

7. To provide necessary equipment to guarantee good functioning within the Galapagos Marine Reserve and to also provide an infrastructure,

8. To maintain the management and control of State funds,

9. To establish and implement evaluation and survey mechanisms for the Management Plan and participative management,

SUBPROGRAMS

9.1.1 Technical Coordination and Planning Subprogram

This subprogram establishes forms of exchange and communication users. This maintains an integrated management system participating in the Galapagos Marine Reserve. It coordinates activities, which are centred on manufacture performance and evaluation of the annual operating plans.

Activities

1. Supervise, prepare and carry out annual operating plans.
2. Coordinate the revision of the Management Plan (periodically).
3. Coordinate the evaluation and regular fulfilment of proposed activities in the programs and subprograms of the Galapagos Marine Reserve Management Plan.
4. Analyse, authorise and continue the proposed scientific investigations in the Galapagos Marine Reserve.

5. Provide the JMP with technical advise when required. It can also be summoned to special JMP meetings with institutions and users.
6. Ensure to periodically inform the JMP in advance on problems and requirements which are coming to surface in the Marine Reserve administration.
7. Simplify participative management across the JMP.
8. Channel JMP proposals to the AIM.

9.1.2. Legal Consultancy Subprogram

This subprogram should ensure that through opinions or other information all decisions, actions and procedures valid according to the Marine Reserve's to this effect. It also recommends the operation of personnel, reinforcing necessary measures for the best management of the Plan. It looks after the continuation regulations should align with the following: the Law of Forestry and of Conservation of Natural Areas and Wildlife, the Special Regime Law for the Conservation and Sustainable Development of the Galapagos Province and their respective legislations. Legal consultancy is also to be supplied to AIM, DPNG and JMP.

Activities

1. Prepare legal documentation for projects of the Galapagos Marine Reserve's administration.
2. Advise AIM, DPNG and JMP in legal matters.
3. Handle legal processes.
4. Prepare, negotiate and fulfil legal actions, which deal with the protection of the Galapagos Marine Reserve.

9.1.3 Subprogram of Interinstitutional Coordination

This program should guarantee the communication flow between different institutions and sectors. It should also involve direct or indirectly implicated users in the participative management of the Galapagos Marine Reserve. It also guarantees the achievement of actions aligned with methods of the General Aim of this Management Plan.

Activities

1. Coordinate with the Fishing Resources Sub secretariat, national armed forces and fishing inspectors. Other necessary personnel should also be coordinated for the control of scientific investigation and survey activities.
2. Coordinate efforts in order to attain funds to improve the financials of the Galapagos Marine Reserve.
3. Coordinate efforts to obtain funds, which ensure the effective functioning of the JMP.
4. Involve all interested parties of each island in the revision of the Management Plan and of adapted management activities.

5. Recommend the participation of other sectors and professional associations to the JMP when circumstances warrant this.
6. Broadcast events of the Galapagos National Park on a national level.
7. Ensure the continuation and fulfilment of legal actions, which are aimed at the protection of the Galapagos Marine Reserve and its administration.
8. Coordinate with DIGMER the central effects being made on the Galapagos Marine Reserve.

9.1.4. Subprogram of Human Resources

This subprogram looks after and guarantees recruitment selection and contraction of personnel. This is only following negotiations with relevant budget parties, evaluation and fulfilment of general efficiency in employee personnel rights. It is coordinated with the respective procurement program and training of recruited personnel.

Activities

1. Implement technical studies for new job opportunities and personnel recruitment.
2. Personnel administration.
3. Establish and implement training systems for incentives and promotions.
4. Establish and implement a system of personnel evaluation.
5. Create new job opportunities and provide permanent personnel for the three islands. This is required to coordinate and aid the fulfilment of participative management.

9.1.5. Management and Administration Subprogram

This subprogram is designed to ensure suitable financing of the Galapagos Marine Reserve. It also provides an infrastructure and necessary equipment to guarantee correct performance of operations. It also to ensure correct functioning and security of the Marine Reserve as well as improving internal communication and current documentation and archive systems.

Activities

1. Elaborate budget plans and identify financial resources. Design strategies to raise funds and to guarantee funds for execution of management programs.
2. Ensure that a percentage of the entrance tax to the Galapagos National Park, which is assigned to the Galapagos Marine Reserve, is allocated to management.
3. Guarantee the assignment of designated funds as set out in the Law of Special Regime for Conservation and Sustainable Development in the Galapagos Province. This is also to ensure the control and patrol of the Marine Reserve by the National Navy. It also ensures that Navy craft are available when required.
4. Maintain updated maps with which the different zones of the Galapagos Marine Reserve are easily distinguishable.

5. Manage and handle documentation and to keep it stored in a secure location.
6. Issue licenses to diving naturalist guides.
7. Issue licenses (coordinated with the fishing cooperatives) to artisan fishermen of the Galapagos.
8. Issue fishing permits to boats.
9. Issue permits to tourist boats, which offer Bay and Dive Tours and sport fishing.
10. Coordinate with the port Captains to register boats, which are designated for tourist activities and artisan fishing within the Galapagos Marine Reserve.
11. Issue authorisation for commercial, educational and scientific film productions assuming that regulations established in the Management Plan are being observed and respected by said productions.
12. Recommend the fulfilment and performance of external private audited films with the authorisation of the State General Control.
13. Judge and sanction offences committed within the Galapagos Marine Reserve. The Law of Forestry and Conservation of Natural Areas and Wildlife and the Law of Special Regime legislate these against for the Conservation and Sustainable Development of the Galapagos Province.
14. Coordinate personnel supervision.

9.1.6 Operations and Maintenance Subprogram

This subprogram is in charge of putting into effect distinct operations required for a complete development of programs laid out in the Management Plan. It should also maintain a steady communication flow with the personnel of the Subprogram of Administration this is to coordinate any required actions to be taken.

Activities

1. Plan, construct and maintain the infrastructure of the Marine Reserve.
2. Coordinate the construction, acquisition and maintenance of properties belonging to the Marine Reserve (boats and equipment, for example). This is in order to control and patrol the Galapagos Marine Reserve.
3. Acquire and provide budgets and costs, supplies, material, and equipment to different programs.
4. Coordinate with DIGMER the implementation and maintenance of floats, buoys and other sea markers. These are security necessities for Marine users.
5. Implement an itinery system, which avoids the overload of visits to underwater sites.
6. Implement a codified and modern internal communication system, which ranges throughout the whole archipelago.
7. Hold an implementation charge for the Fishing Register.
8. Implement a fishing certification program.
9. Ensure high visiting quality to tourists of the Galapagos Marine Reserve.

9.1.7. Financial Management Subprogram

This subprogram serves to: plan and maintain book keeping, budgeting and financial systems. It also manages and controls the state funds. It handles budget rises by contracting personnel and implementing necessary operating expenses. It also functions to maintain storage and acquisition of property systems and the storage of property inventories.

Activities

1. Elaborate, implement, control and liquidate the budget.
2. Maintain storage and acquisitions.
3. Maintain inventories and other properties.

9.1.8. Evaluation Subprogram

This subprogram brings forward a system of continuation and evaluation after a thirty-month period. The continuation provides regular information relating to the implementation and efficiency of the Management Plan. The evaluation is based on a general revision of the aforementioned implementation. The general evaluation may advance the continuation of programs if this is proved necessary. The design of this subprogram has been through the JMP and technical assistance. The continuation and evaluation are systematic, consistent, flexible and conducted at a local level with local relevance. They are based on socio-economic and biological indicators. As a function of the general objective, there is an analysis made periodically regarding level of implementation and efficiency of the Management Plan. An evaluation is also conducted on the participative management system as has been adapted for the Galapagos Marine Reserve.

Activities

a) **Continuation and Evaluation of the Management Plan.** This activity serves to provide bases for analysis of efficiency of implementations of the Management Plan of the Galapagos Marine Reserve. These bases start from socio-economic and ecological indicators. Moreover, continuation and evaluation of the feasibility of the financial plan is also provided.
    1. Identify and use ecological and socioecological criteria which regularly measures the efficiency of the Management Plan.
    2. Create a base line describing the present situation of the RMG and of its users. Also allowing for comparatitive study.
    3. Identify and employ criteria, which regularly evaluate implementation levels and general performance of the Management Plan.
    4. Identify and employ criteria, which regularly evaluate efficacy of adapted management.
    5. Identify and employ criteria, which measure financial feasibility of the implementation of the Management Plan.
    6. Coordinate with different programs the use of relevant information for the elaboration of criteria for evaluation and continuation.

7. Implement an evaluation of the general revision of the Management Plan.
8. Analyse and broadcast results of continuation and evaluation to the JMP, Marine Reserve users and to propose recommendations.

b) Continuation and Evaluation of the JMP. The JMP is a forum of discussion in which users may raise their requirements, complaints and desires and also form solutions aimed to compliment the general aim. This participative mechanism should efficiently respond to the dynamics of ecological and social realities. It strives to provide methods of continuation and evaluation of decision-making efficacy, management of conflicts and participation and representation of the Committee of Participative Management.

1. Create and employ indicators, which measure the efficacy of the JMP's decision-making process.
2. Evaluate the training and capacity of the JMP to manage conflicts, which arise between users.
3. Create and employ indicators, which measure the grade of participation, representation and communication of different users.
4. Identify and use criteria, which measure financial feasibilities of JMP implementation at sectorial and global levels.
5. Analyse and broadcast results of continuation and evaluation with the JMP and users as well as presenting recommendations.

c) Continuation and Evaluation of Attitudes and Awareness. The elaboration and implementation of the Management Plan is an educational process, which should transform awareness and attitudes of its users. It should also change the attitudes and levels of awareness of the Galapagos, national and international communities. It should evaluate and continue these changes relating to conservation of ecosystems, use of Marine resources and participation efficacy of the Marine Reserve's Management. This information acts as a base for comprehension of knowledge and social awareness changes. These changes come as a result of the participative management methodology of the Marine Reserve.

1. Design and implement a methodology of fulfilment and continuation of changes in attitude and awareness of local users, Galapagos, national and international communities relating to ecosystem conservation and use of marine recourses.
2. Design and implement a methodology of combination and evaluation of attitude and awareness changes in users, and in communities in the Galapagos, and at national and international levels. These changes relate to attitudes and awareness of the relevance of the JMP , the efficacy of its decision-making methods and knowledge of the Management Plan.
3. Analyse and broadcast results of continuation and evaluation of the JMP and users. Recommendations are also to be issued.

9.2. PROGRAM OF INVESTIGATION AND CONTINUATION

This program is designed to identify and lay out investigation strategies to be implemented by the Galapagos Marine Reserve. The results of this program

represent the principal source for decision making of orientated adaptive management as set out in the general aim of the Management Plan. The central proposition and purpose of this program is to provide the main scientific information bases, which aid protection and conservation actions of the Galapagos Marine Reserve.

- **General Objective**

To provide necessary technical and scientific knowledge to facilitate decision-making and reform the Galapagos Marine Reserve. This information relates to protection and conservation of the marine-costal biodiversity while permitting rational use and sustainability simultaneously.

- **Specific Objectives**

1. Permanently and systematically evaluate human activities (both extractive and non-extractive). This objective is to establish sequential time processes of continuations of distinct activities developing within the RMG. This leads to detailed information about the dynamics of these activities as well as distinguishing anthropological effects, which affect the natural conditions of the RMG ecosystems in a negative way.
2. Determine abundance, distribution and limits of natural variation in the ecosystems, communities and marine-costal species of the RMG. This is an attempt to establish and extend scientific knowledge bases concerning the marine-costal biodiversity and its interrelations and functions. This objective is designed to highlight what, how much, where and how the biodiversity of the RMG occurs and functions. It also establishes procedures and protocols to respond to these questions.
3. Provide a method to distinguish effects of human activity on natural variation. This objective seeks to identify and clearly establish the cause-effect reaction observed in variations of the ecosystems, communities and species. Only the existence of areas of no direct effects from human use (zones of protection and control) can help to determine these causes and effects.
4. Identify non-natural agents who generate abnormal conditions in the marine-costal ecosystems, communities and species. This objective is to determine origin and direct and indirect causes of negative changes deriving from human activity on the marine-costal biodiversity within the Galapagos Marine Reserve.
5. Establish management methods to mitigate, oversee and restore ecosystems, communities and species. The purpose of this objective is to remedy, foresee in some cases and reverse negative changes and their effects. In an operational form, the objective seeks to implement recommendations and actions in the given terrain to prevent undesirable changes.
6. Provide methods and information to evaluate the efficacy of applied management actions of the RMG. This is to establish an effective mechanism for the use and dissemination of

information and results. Equally, this objective is to ensure an effective evaluation of management, protection and conservation.

7. Determine socio-economic benefits and consequences for humans and local populations affected by the environmental management of the Galapagos Marine Reserve.

The scientific and technical information generated by this program will serve as the primary source for technical information for the work of the JMP, PNG and AIM principally. These bodies make managerial decisions relating to the RMG using this information source as a base. The information will be synthesised into technical reports, recommendations and evaluations, which will be published as periodicals or according to, required frequency for data information.

SUBPROGRAMS

9.2.1 Subprogram of Investigation and Continuation of the Environment and Ecosystems

This subprogram includes studies and profiles of the environments within the Galapagos Marine Reserve. These studies and profiles are required to establish a complete system of investiongation and pursuit with long-term focus being placed on the marine-costal biodiversity of the RMG. The operation of this subprogram is concentrated on communities, ecosystems and environments. This subprogram is to determine and discriminate changes in the environment due to natural phenomena and impacts of human activities (other than tourism and fishing). Biological and ecological changes are also considered in studies of the effects on oceanographic processes by both El Nino and anthropological factors (chemical, solid and waste contamination, introduced species, destruction of habitats, urban growth, amongst others). The central propositions of this subprogram are: a) to understand nature and functions of the RMG marine-costal biodiversity, b) to determine and describe causal variations of natural variation, and c) to establish scientific bases which provide indicators to evaluate management efficiency.

Activities

1. **Base Line.** This action is one of the first to be put into practise by this subprogram. It seeks to establish the “initial” conditions of the RMG biodiversity on a quantative and qualitative scale. For this, examination in biogeographically representative sites is carried out as initial measures to evaluate conditions of sites prior to applied management and conservation by the Management Plan. Equally, scientific study information made previously within the Galapagos Marine Reserve will aid the creation of the Base Line by acting as reference points for the fulfilment of comparatative, evaluative, taxonomic, and distributive studies. This will identify sites, which contain ecosystems of adequate sizes for education and training as well as tourism and fishing use.

2. **Biodiversity and Productivity Relations.** This activity holds as an objective the pursuit of intensive evaluation in zones of different management regimes (protection and extraction, for example). This is to compare effects of management methods of human activities (these being tourism and fishing) through zonification. The objective is also to discover how these activities are affecting productivity and biodiversity. This should lead to the possible variation of management, for example, in relation to the recuperation or deterioration of a specific resource, community or habitat as a result of zone management.
3. **Ecological GPS.** This activity is to establish a constant registration system of abundance, distribution and geographical patterns of the RMG biodiversity. This system is coordinated between scientist, users and nature guides in order to centralise a development of dedicated or casual observations that are daily occurrences within the Galapagos Marine Reserve. All the information is stored as part of the GPS Galapagos.
4. **State and Trends of Indicative Communities (of use and non-use areas).** This activity is to implement periodical studies in a distinct types of communities (reef rocks, sand beaches, vertical cliffs, etc) of the different islands. This is in order to obtain information of a global nature concerning the biodiversity contained in these communities. This will lead to more information on temporal and special patterns of structures, functions, abundances and distributions. Equally, these exact and reliable studies are carried out in zones of distinct grading of human use. This enables distinctions to be drawn concerning effects on marine-costal biodiversity in zones of distinctly graded use within the Galapagos Marine Reserve.
5. **State of Costal Vegetation (dunes, mangroves, lagoons).** These communities are an essential part of the marine environment and are included in the program as a result. They are evaluated station ally and annually in areas containing high quantities of endemic species (dunes) and areas, which have limited abundance and distribution (mangroves). The preplanned actions of this activity will be complimented and coordinated by plans laid out for these areas by the Management Plan of the PNG.
6. **Base Oceanography.** This activity involves basic studies of oceanography involving water temperature, salinity and primary productivity levels. Drastic oceanographic changes have huge effects on marine and terrestrial ecosystems. The recording of oceanographic parameters is to be carried out during normal conditions in order to increase knowledge and information possibilities during times of natural phenomena.
7. **Water Quality.** A periodical study of contamination levels in waters surrounding Port zones especially where there is a risk to human health. This type of survey includes bacterial, chemical and solid contamination analysis.

9.2.2 Species Investigation Subprogram

This program is to carry out studies of specie populations and fishing resources. Evaluations of population, trends and dynamics are the primary source for effective resource and conservation management. This subprogram seeks to establish an evaluation system, which will detect positive and negative population changes in order to take actions if necessary. The purposes of this subprogram are: a) to provide information about the state and function of population levels for their effective management and control, b) to determined relations and causes of changes in states and trends of populations, and c) to establish a system of independent evaluation of fishing activities (evaluations of stocks and stock taking methods).

Activities

1. **Evaluation of Stock or Resource Populations.** This activity performs evaluations of abundance and distribution levels of commercially exploited species by direct periodical surveys and indirect estimations (CPUE Capacity for United Effort). The objective is to determine the state of resources, their sustainability and how they should be managed (by quotas or by prohibition, for example). The primary resource species are; lobster, sea cucumber and tuna.
2. **Biological sampling of Captures**. This activity compliments proposal c) of this subprogram in which samples are taken of specific biological measurements of captured species from jetties and fishing boats. The principal measurements are: weight, size, sex, reproductive condition, feeding, age and growth.
3. **Biological and Ecological Populations of Other Species.** This activity is designed to carry out specific biological and ecological studies of other species (not those exploited as resources), which require conservation, management and protection all the same. These studies seek to recognise and identify reproductive cycles, population trends and consistencies as well as changes in the population structures of these species.

9.2.3 Investigation and Fishing Survey Subprogram

Commercial artisan fishing is the most extensive extractive activity permitted in the RMG and is highly dynamic. It is for this reason that its management requires precise information relating to the magnitude of these activities and actions. This subprogram introduces and permanent system of surveillance. This includes observation of activities such as direct actions (capture and efforts) and indirect actions (incidental fishing, consumption, markets). The result is an increased information base, which is necessary for the application of effective adaptive management. This program is principally applied to resources (species), workers, and methods (fishermen, boats, methods) and socio-economic conditions in which this activity (of commercialisation and marketing) is developing. The central proposals of this subprogram are: a) to measure dimensions and levels of resource extraction, b) to estimate time variation as with the geography of the RMG, c) to establish information bases for the management of distinct fisheries, and d) to promote understanding within the fishing sector about the value of management of resources and protected areas using zonification as a central method.

Activities

1. **Incidental Fishing (By catch).** This activity consists of the creation and implementation of a fishing observation program, which takes data information of incidental, captures on boats, fibres and pangas during fishing operations. During each surveyed operation (only a fraction of the total amount), observers collect information on fishing operations, methods and captures.
2. **Sightings (System of Geographical Information).** This activity is based on a Captain's log –book system. Ship captains collect geographical information on use areas (both extractive and non-extractive) within the RMG. They also record biological information of sightings of mammals, birds and other species that are both common and uncommon in the RMG.
3. **Capture and Effort.** This activity is carried out in the form of a diary of simultaneous records of captures, distribution and efforts in the three principal islands. The data is recorded from jetties and fishing disembarkation zones on the islands of Isabela, Santa Cruz and San Cristobal. Also registered are fishing locations, captures, weights, times, emarbarkation types, zones and species.
4. **Commercialisation and Marketing.** As in the case of the previous activity, this is centralised on surveillance of sales and purchases of fishing produce. This daily activity involves interviewing specific merchants who buy and export fishing produce. Equally, every three or four months, evaluations are made at fishing produce stores, tourist companies, hotels and restaurants where the internal consumption rate of these products is evaluated. This activity evaluates where the majority of Galapagos fishing activity is channelled – to internal consumption or exportation.
5. **Fishing Training and Inclusion.** The central idea of this activity is to establish a permanent system of inclusion relating to the fishing sector to ensure that it participates actively and substantially in investigations and surveys. This is also to determine and strengthen individual training in the fishing sector to respond to negative and positive situations and consequences resulting from zone management of the RMG. For this the following is in effect: a) creation of a special backing of financial resources of sole use in exclusive training of the fishing sector in matters of management and fishing participation, b) availability of professional help for courses, lectures and workshops to train the fishing sector in subjects relating to conservation and management of resources through zonification and community participation, and c) involvement of fishermen in selection and evaluation of sites included in the zonification of the Galapagos Marine Reserve and in the following implementations of zones.

9.2.4 Investigation and Surveillance of Tourism Subprogram

The growth of the tourism industry in the Galapagos requires a management based on up to date and current information relation to development of possible environmental impacts. Although the direct negative effects of this activity are not of an extractive nature, they are also not yet apparent in the Galapagos Marine Reserve. AS a result, the establishment of a system of long-term monitoring is required. This is to detect and to be aware of the negative effects of tourism on the biodiversity in as little time as possible. The purposes of this subprogram are: a) to

determine levels of use (according to frequency and intensity) and to train those in charge of visitor sites of the marine-costal area, b) to evaluate levels of impact (contamination, behaviour) and c) to manage areas of tourist use by foreseeing and dealing with adverse effects in these areas. The visitor sites are units of investigation and survey concerning work on communities and species.

Activities

1. **Use and Training of Personnel.** This activity evaluates the frequency and intensity levels of use of marine-costal visitor sites to estimate possible methods of management and staff training. This activity is performed in order to establish a systematic register of information of special uses (based on GPS data), which serve to determine the ideal number of users visiting the sites. This is to reduce impact that is caused by frequent use of the determined zones.
2. **Evaluation of Visitor Sites.** This activity involves accurate and exact surveys and studies of visitor sites, communities and species. These studies serve to determine effects and impacts caused by marine-costal touristy use. These evaluations correspond to inspections on location and in the sites terrain.

9.3. VIGILANCE AND CONTROL PROGRAM

According to Article 13 of the Law of Special Regime for the Conservation and Sustainable Development of the Galapagos Province, the Galapagos National Park is the administrative body of the Marine Reserve, which holds jurisdiction and power over the transit of natural resources and residents living within the Reserve.
The program of Control and Vigilance includes the execution of “audit, inspection and registration of activities” for control and “surveillance over things and activities” for vigilance.
The successful application of this program requires a coordinated interinstitutional effort. It also requires the fulfilment of proper financial and supervision compromises on the parts of each institution as well as training and equipment strategies and application of standards and regulations. This program requires inclusive and extensive relations and interactions. It should be coordinated accordingly with subprograms of judicial consultancy, interinstitutional coordination of administration and direction with the environmental education and communication program.

- **General Objective**

To protect and conserve extractive natural resources within the RMG by using regulations and laws established in the Management Plan as well as laws with regulations that are applicable within the Marine Reserve.

- **Specific Objectives**

1. Increase user and general public awareness concerning why it is important to abide by the regulations of the Marine Reserve.
2. Ensure voluntary obedience to applied laws.
3. Promote self-control and maintenance of the Marine Reserve through participative management of responsibilities with users.

4. Promote cooperation, communication and coordination with other institutions of state control and to improve the use of limited resources with well equipped boats and trained personnel.
5. Control and keep guard over activities performed by users in the Marine Reserve ensuring that they are uses that have been stipulated in the Management Plan.

SUBPROGRAMS

9.1.3 Subprogram of Operations

The two most dynamic and important economic activities in the Galapagos Marine Reserve are tourism (a commercial non-extractive activity) and artisan fishing which is an extractive activity allowed within the protect area. This subprogram is to establish operational systems of control and vigilance, which detect violations or acts, which go against established regulations. The subprogram is also designed to respond in an efficient way to these acts and to control and apply respective sanctions. The proposals are: to maintain a training scheme for investigators providing an immediate response to violations; and to develop and maintain an efficient team, which is able to immediately intervene on violations.

Activities

1. Reinforce existing agreements and develop others with national and international institutions. This ensures the promotion of cooperation, communication, and coordination, particularly in the control area. This is run by an efficient team who are able to intervene immediately when necessary.
2. Perform patrols in costal and remote marine areas. This is to control and safe guard activities permitted by the Management Plan.
3. Establish control bases and advanced and dissuasive watch posts for remote observation to take immediate action according to specific control strategies.
4. Establish geographical patterns of illegal fishing through sightings using the Global Positioning System (GPS).
5. Develop and implement an operation plan for control and vigilance, which anticipates any required increases of Park Guard teams in areas of high sensitivity or of frequent use.
6. Develop and implement an operational plan for control and vigilance, which identifies specific strategies of control and priority as well as general operational procedures between different involved institutions. Training of personnel should also be controlled and implemented.
7. Manage the acquisition of efficient and current systems of communication for patrol work around the archipelago.
8. Participate in the design and integrate the Commission of Control and Vigilance for diving accidents. A periodical evaluation is to be made of the Management Plan and of corresponding regulations for each location. The Commission consists of the following:

    a) PNG, which presides;
    b) Delegate from DIGMER;
    c) Delegate of diving guides; and
    d) Delegate of diving fishermen.

9. Recommend regulations to the JMP, which are easily implemented and easily understood by users.

9.3.2. Participatory Community Control Subprogram

The Management Plan for Conservation and Sustainable Use in the Galapagos defines the alliances and levels of local participation and responsibility of user groups, which is, organised trough the JMP. These levels of participation grant users the benefit of forming part of the decision making process as well as the responsibility to carry out and abide by established regulations. The subprogram seeks to promote integration of users and the general community. The central proposal is to promote a strategy of increasing cooperation and relations between the Galapagos Marine Reserve and the local community. In this, the community cooperates with violation reports. More over, active or young volunteer member work for control and vigilance systems to motivate self-regulation and control of RMG users.

Activities

1. Elaborate an increased cooperation and relationship strategy with the participation of users through specific work plan preparations, which emphasise the importance of voluntary obedience to regulations of activities within the RMG.
2. Implement the Control and Vigilance System with the participation of local volunteers who collaborate with inspectors.
3. Coordinate activities with environmental education and communication to promote self-regulation with responsibilities within the participative management of the RMG. To also facilitate comprehension of existing regulations for users.
4. Avoid and establish self-regulating control mechanisms.

9.4. PROGRAM OF ENVIRONMENTAL EDUCATION AND COMMUNICATION

The Galapagos Marine Reserve contains users with many different needs and interests. The JMP serves as a means through which users are offered the possibility to establish agreements of mutual benefits and which allow for the conservation and protection of the Marine Reserve. All the negotiation efforts represented in the Management Plan take into account ecological and socio-economic considerations. The program of Environmental Education and Communication establishes mechanisms which strengthen inter and intra sector communication, knowledge of the Marine Reserve, its participative processes, awareness of the principles of the Marine Reserve management and technical user skills. This improves decision-making capacities of the users, their representation with the JMP and helps to fulfil the general aim of the Management Plan. It also creates broadcasting mechanisms of decisions and terms of agreements of the JMP. These communications are to be spread throughout Galapagos, national and international communities. The environmental and communicative program also promotes the use of the Marine Reserve as an educative mechanism.

- **General Objective**

To increase training and awareness of users in the general community in order to aid good management of the Galapagos Marine Reserve.

- **Specific Objectives**

1. To generate increased environmental awareness about protection and conservation of the Galapagos Marine Reserve in its users, and Galapagos, national and international communities.
2. To improve understanding of decisions, functions and procedures of the JMP users and Galapagos, national and international communities.
3. To develop an educative use of the Marine Reserve for the benefits of Galapagos, national and international communities.
4. To ensure necessary communication between members of the JMP and Marine Reserve users to allow decision making to take place in relation to the management of the Marine Reserve.
5. To generate skills, awareness and knowledge which promotes agreed management of the Marine Reserve between users and JMP members.
6. To collaborate with an improvement of organisation of each user and implicated institution to ensure a better participation with the JMP and an agreed implementation of the Management Plan.

SUBPROGRAMS

9.4.1 Subprogram of Environmental Education

This subprogram seeks to establish formation mechanisms and formal and non-formal awareness of users, Galapagos, national and international communities. It is also to increase environmental awareness as well as an improved awareness of the importance of good management of the Marine Reserve and of participative decision-making processes. The RMG is an educative medium, which demonstrates the functioning of a complex system as well as the social implications of participative management of this resource. Informal educative strategies seek to develop an effective and intellectual relationship between the Marine Reserve and different audiences. Environmental education also takes a formal role, which is very important in the formation of a citizenship with high critical and cognitive levels. This subprogram is coordinated with the Provincial Board of Equation to prepare the teaching personnel and students in terms and education relative to the Marine Reserve. This development of a direct use of the Marine Reserve as a formal and informal education tool should provide students through teaching institutions and users with life experiences and knowledge. This should increase long-term ecological and social awareness of islands inhabitants as well as demonstration in practises the practicalities of agreed management of a protected area.

a) Informal Educational Activities

1. Identify and implement appropriate strategies of informal education for different audiences.

2. Promote positive actions and attitudes towards the Marine Reserve in Galapagos children, youths and adults. This is achieved through the formation of ecological clubs, country visits and use of Educative Centres and materials (educational materials and Educational Centres of the ECCD, for example).
3. Design and implement a project for development of educational use of the Marine Reserve with users and Galapagos, national and international communities.
4. Coordinate with other institutitions of environmental education the organisation of other educative activities relating to the RMG.

b) Formal Educational Activities

1. Active coordination between the Provincial Board of Education, Galapagos National Park, Charles Darwin Research Station, General Board of Maritime Interests through Marine-Costal Environmental Educational Program (PEAMCO) and RMG users in the design and implementation of training courses for teachers and students.
2. Inclusion of terms referring to the RMG and its participative management in the Reform of Integrated Education Curriculum.
3. Use of the RMG as an investigative laboratory to be use d by teaching institutions and students for extracurricular activities (e.g. formation of student clubs, teacher courses etc.).
4. Involvement of local universities in the elaboration of proposals, implementations and evaluations of educational programs relating to uses of the Galapagos Marine Reserve.

9.4.2. Communication Subprogram

This subprogram serves the purpose of creating communication mechanisms between RMG users and the JMP. This is to improve implementation of decisions. This subprogram also develops direct and permanent contact between public communication media and every institution, which generates opinions and information concerning events relevant to the RMG and its users. The aim is to broadcast JMP decisions, conditions and situations within the RMG and socio-economic changes in the different sector groups.

Activities

1. Design and implement mechanisms for intersect or communication.
2. Provide users with informative journals, which summarise information concerning relevant aspects of the RMG. These should particularly include reports on; conditions of ecosystems and environments of the RMG, impact of tourism and fishing activities in the RMG, advances in the Control and Vigilance programs, administrative information on advances and decisions made by the JMP and information about socio-economic development for users.
3. Provide users with periodic information concerning conditions of the ecosystems and environment of the RMG, impact of tourism and fishing activities, advances made in the Control and Vigilance programs, administration information on advances and decisions made by the JMP and socio-economic development

information. This information should be broadcast across all communication systems.
4. Structure and put into action an informative campaign to explain the existence of the JMP and its functions.
5. Create new spaces and times for discussion and reflection regarding management improvement in the RMG.

9.4.3. Subprogram of Sectorial and Institutional Development

The JMP requires that Marine users are members of representative and functioning organisations for its effective management. These organisations should not only understand the relevance of their participation in the management of the Marine Reserve but should also be prepared to collaborate in decision making that is technically acceptable and practical. This subprogram collaborates with different sectors and institutions to accelerate their training levels and improve capacities for this goal. It also aids formulation of training and investment initiatives, which help to strengthen socio-economic development and effective management of the RMG. The PNG, as the administrative institution should use its skills, training and knowledge to respond to the challenge of participative management of the RMG. For this, a number of activities have been arranged to strengthen the PNG through sectorial management of conflicts amongst other requirements.

Activities

1. Elaborate a diagnosis of user and institution needs from relevant programs.
2. Collaborate in the implementation of sectorial aid from numeral 1. in organisational areas (such as technical, for example). This ensures the fulfilment of the general aim of the RMG regarding sector users.
3. Coordinate with the Evaluation and Continuation program in the improvement of evaluations involving RMG users.
4. Assist JMP members in its technical and organisational formation and in its methods of conflict resolution.
5. Train personnel in relent departments of the RMG to improve collaborative implementation of Marine Reserve management.
6. Collaborate with the Provincial Education Board in the elaboration of strategies, which include the RMG and its management within the Integrated Education Curriculum.

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FISHING
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MANAGEMENT PLANS
MARINE CONSERVATION
GALAPAGOS MARINE RESERVE
PARTICIPATIVE MANAGEMENT

APPENDIX I

LIST OF PARTICIPANTS OF THE EXTENSION OF THE MANAGEMENT PLAN, 1997 – 1998

INITIAL PREPARATION OF THE REVISION OF THE MANAGEMENT PLAN, 5th, 6th and 7th of June 1997

PARTICIPANTS
SECRETARIES AND ASSISTANTS
FACILITATORS

PREPARATION OF ZONIFICATION OF THE GALAPAGOS MARINE RESERVE, 9th, 10th and 11th October 1997
PARTICIPANTS
FACILITATORS
SECRETARY

FINAL PREPARATION FOR THE EXTENSION OF THE MARINE RESERVE MANAGEMENT PLAN, 29th, 30th and 31st October 1998
PARTICIPANTS
OBSERVERS
FACILITATORS
SECRETARIES

APPENDIX II

CHARACTERISTICS OF THE GALAPAGOS ISLANDS

1. BIOPHYSICAL CHARACTERISTICS

The Colon Archipelago or Galapagos Islands belonging to the Republic of Ecuador are located in geographical Ecuador of the Pacific Ocean (around 0-00' latitude and 90-00' longitude east) around 1,000 km east of the South American continent.

The Galapagos Islands were formed by volcanoes in the Carnegie dorsal, which lie on the Nazca Plate and are surrounded by the Pacific and Coco plates located to the west and north respectively. Two geological phenomena have formed the archipelago. The first is the proximity of the location to two centres of continental dispersion. These are the dispersion centre of the East Pacific and the dispersion centre of the Galapagos. The second phenomena are the existence of a "hot spot". The "hot spot" is an opening in the earth's crust, which allows lava to rise continually, at the same time the Nazca tectonic plates move across in a west to southwest direction. This lava ascent has formed the Carnegie and Cocos dorsal at the front of the Costa Rican coast.

The islands emerge from a platform of surface depths greater than 1,300 metres the surrounding waters of which are between 2,000 and 4,000 metres deep. The interior waters of the islands cover a surface area of 50,130 km2 forming a substantial interior sea. In the waters exterior to the interior sea (a distance of more than 40 miles from the base line) exist a number of zones where the "bajos" are located. The bajos are mountains; underwater volcanoes some of which are up to 100 metres high. These bajos represent important feeding zones for birds of prey and marine mammals that live on the islands. The bajos are an integrated part of the Galapagos Marine ecosystem.

The marine area decreed as the Galapagos Marine Reserve embraces a surrounding range of 133.00 km2. This includes all the interior waters of the archipelago and all those contained within 40 nautical miles measured from the base line.

The archipelago consists of 14 main islands which vary from 0.1km2 to 460 km2 as well as more than 107 islets and rocks with surface areas of less than 0.1km2.

1.1. COSTAL GEOMORPHOLOGY

The majority of the Galapagos costal and deep marine consists of volcanic lava and craters on a lesser scale.

The sand of the beaches is of biogenical and volcanic origin. This means that the material comes from the empty remains of marine organisms (corals and shells mainly) and from the environmental breakdown of lava from the areas surrounding that of the sedimental origins.

As a result of the hardening of magma produced by the constant volcanic eruptions, the basaltic rock formations of the coast reflect a variety of forms. These range from surface planes to bay systems, small coves, ditches, crevices, straits, excavations and caves of all orders and sizes. In some locations swell action the geographical terrain structure, becomes apparent in the formation of cliffs.

Another characteristic of the submarine parts of the islands is accentuated reliefs or prominence. This is seen in the form of craggy, sheer slopes, which signify a zone

change from infralitoral to bestial in the space of a few miles. The Galapagos submarine area covers 6,700 km2 across depths of on to 180 metres.

1.2. CLIMATE AND OCEANOGRAPHY

1.2.1 Oceanic Circulation

The principle horizontal surface current, which affects the archipelago, is the South Equatorial current, which moves in a East-West direction. This current is joined by the cold waters of the Humbolt current. The South Equatorial current is fed from the North by warm tropical waters of the North Equatorial counter-current across the Panama current which flows in a Northwest direction. The most important subsurface current is the Equatorial (Cronwell) current, which flows to the East. This produces local aflorimentations of water especially high in nutrients, which enrich the surface stratum.

The annual cycle of water circulation coincide with existing climatic events which vary intra and internally. The marine circulation system seems to regulate compositions and structures of biota communities in the archipelago.

1.2.2. Interior Currents

The interior currents of the archipelago flow in northwest, west and east directions in the different regions of the islands. Recorded velocities range from 32cm/sec and 62 cm/sec. The interior circulation is classified as being high grade for tidal currents. Without embargo, the Equatorial Sub current disperses cold water, which is rich in nutrients, and this alternates between the coasts of islands from west to east. This creates distinct zones of aflorimentation in distinct islands. The most affected area with highest intensity of aflorimentation is to the west of Fernandina and Isabela. This aflorimentation of cold water is the principle reason for the topographic effect found on the Galapagos platform.

1.2.3. Temperature

The surface temperature of the Galapagos Sea is considered to be unusually cold for a tropical region. Temperature registers have shown that the archipelago water has a distinct and strong southern or south hemispheral “mark” in spite of being a tropical region. In general, the tropical Pacific has a strong temperature gradient, which ranges from colder in the East (South American Coast) to warmer in the West (Indonesia).

This pattern has been reversed in the Galapagos, the water temperature gradient being colder in the West and warmer I the East. This change is due to circulation effects and local aflorimentation. The annual temperature cycle includes a warm period between January and April with temperatures fluctuating between 26 Celsius and 28 Celsius and a cold period during the rest of the year with minimum temperatures of 24 Celsius. However, in Western areas, temperatures as low as 14 Celsius have been recorded.

Temperature regimes vary to a great extent in annual averages. It is for this reason (diverse temperature regimes) that the Galapagos can be divided into distinct regions ranging from tropical to subtropical with hot and cold temperatures.

To the North of the archipelago, the waters remain warm throughout the whole year. To the West of Isabela is an almost permanent area of cold water. The reason for

this is a main aflorimentation resulting from the Equatorial subcurrent. These waters have a great influence on hydrographs of the entire archipelago.

1.2.4. Salinity

The analysis of salinity distribution in the archipelago, which reaches maximum levels of 35%, corroborates with the role played by the Equatorial Sub current with the aflorimentations. These are cold waters with high salinity levels and high concentrations of nutrients.

1.2.5. Oxygen

Despite the constant presence of recently aflorated waters, the water of the Galapagos marine is generally unsaturated in dissolved oxygen.

1.2.6. Nutrients

The concentration of nitrates is usually used to indicate the productivity of a marine ecosystem. In the case of the Galapagos a strong gradient of high levels in the West and around the bajos of the East is found. Low nitrate levels are usually explained a related to levels of phytoplankton presence which consumes nutrients. This, however, is not the case in the Galapagos as Phytoplankton is abundantly present throughout the whole archipelago. The range of concentration of nutrients found in the different types of water in the Galapagos clearly demonstrates that satisfaction processes are common in the archipelago. This is a result of the aflorimentation presence.

1.2.7. Climate

The principal climate regulator is the surface temperature of the sea. This affects the humid, high temperature phase of January to April and the dry phase of the rest of the year. The marine climate of the Galapagos is classified as subtropical. This marine climate of the Galapagos is classified as subtropical. This is despite the conditions of the Northern islands being comparable to tropical conditions while the more Southern Island climates resemble moderately to warm regions.

1.2.8. Tides

The Galapagos tides rarely exceed an amplitude of two metres. They play an important role with water flows in the costal zones.

1.2.9. El Niño

This is an a periodical event during which warm waters from the Western Pacific flow into the Galapagos region of the Pacific. This is a Phenomenon of an ocean-atmospheric interaction. It involves the increasing of mixed layers and the deepening of isothermals. El Niño events drastically alter both marine and terrestrial ecosystems. The identification and study of pelagic and costal biological indicators could serve as a base for eventually deterring the evolution and intensity rates of such events. These studies could, in time be used as tools to predict occurrences of El Niño.

2. ECOLOGICAL AND BIOGEOGRAPHICAL CONSEQUENCES OF HYDROLOGY

The Galapagos superficial currents could be the principal factors causing biota visual colonisation. The presence of the same waters flowing around the archipelago for the most part of the year acts as a barrier to contain potential emigrants. The isolation and endemic status of the archipelago is a result of this water flow.

2.1. ZOOGEOGRAPHICAL SETTLEMENTS

The representatives of tropical and subtropical fauna from the Oriental Pacific have been transported by the Panama current and by events such as El Niño. The representatives of warm climates originate from the Peruvian and Chilean province. These have been transported to the Galapagos by the south Equatorial current as well as by the system of the Humbolt current. The biota representatives of the Western Pacific have reached the islands through the North Equatorial Current. Most affinities are related to the tropical and subtropical continent of the American Pacific. It follows that marine biota life in the Galapagos originates from many diverse areas. Information gathered prior to the El Niño year of 1982-1983 showed that the Panamas province was the origin of 54% of the ictiofauna. 23% according to knowledge at this given time were classified as “own” or exclusive (endemic) to the Galapagos. 12% of the fauna was identified as originating from the Indopacific region. A further 2% were categorised as being common to areas of the Atlantic.

2.2. DISPERSION SYSTEMS

The main dispersion system is provided by surface currents. These aid the transportation of plankton lava. Organisms of the Panamas province originating from Colombia and Ecuador have been transported by the South Equatorial and Panama currents. The elements from Peruvian and Chilean Provinces were transported to the Galapagos by the flow of the Humblot Current. The Equatorial sub current also has the capacity to transport lava which are found at subsurface levels (for example, lobster lava)

2.3. BARRIERS

The longitudinal barriers consist of the continental of Central America to the East and the Ekman Barrier to the West of the archipelago. Latitudinal barriers are thermal.

2.4. PRIMARY PRODUCTIVITY

The primary productivity of the archipelago is generally high. This level is related to high availability of nutrients from aflorimentations in the folic zone. The highest levels of concentration of Clorox are recorded to the West of the islands. High productivity zones of the archipelago’s interior are associated with local aflorimentations. Moreover, the highest benthonic primary productivity levels of macrophyton algae are the Western zones of the Galapagos.

2.5. SECONDARY PRODUCTIVITY

The highest levels of zooplankton biomass have been recorded to the North of Isabela. Seasonally, highest productivity levels are during the cold period. It is not a well-known fact that base species are the most involved in the Secondary productivity. These species are associated with locations of high water interchange activity where the most biomass (corals and crustaceans mostly) is produced.

3. CHARACTERISTICS OF THE MARINE ENVIRONMENT

- Isolation
- Unique position with Southern Oceanographic Characteristics
- Special climatic, marine, oceanographic, temperatural and fluctuating conditions.
- Geographical position with very dynamic horizontal currents.
- Strong environmental changes every 3 to 8 years due to El Niño.

4. CHARACTERISTICS OF THE MARINE ECOSYSTEMS

- High diversity levels
- High endemic levels (one of the highest in the world)
- Abundant numbers of species
- Mixed biogeographical affinities
- Diverse habitats
- Species that are unique in the world
- Abundant presence of invertebrate fauna at shallow depths.

APPENDIX III

THE GALAPAGOS MARINE COSTAL BIODIVERSITY

1. ECOLOGICAL BIODIVERSITY

The Galapagos Islands constitute one of the most complex, diverse and unique oceanic archipelagos of the world in which the ecosystems and biodiversity have been maintained without alteration or interference from human activity. The location of geographical isolation, the biological richness, the evolutionary processes reflected in unique flora and fauna and the lack of human activity all contribute to the Galapagos being accredited and globally recognised under the titles of "Biosphere Reserve" and "Global Heritage of Humanity". Within the marine and terrestrial environments of the Galapagos, narrow and specific relations of interindependence are maintained. This is reflected in the presence of examples of the unique marine iguana and the only tropical penguin in the world. These interindependence signifies that any alteration to any one of the environments has direct and indirect repercussions on others. The Galapagos Marine Reserve cannot be treated as a terrestrial area (as controlled by the Galapagos National Park (PNG)).

The climate, marine currents, history and geographical isolation of the Galapagos have all resulted in a high grade of biological diversity and endemism. More than 2,900 species or marine organisms have been recorded up to this date. Of these, 18.2% are endemic, though the average of endemic biota groups surpasses 25%. Table 1 shows the different groups, numbers of endemic species and endemism percentages. Developed studies have included quantification and identification of new species, principally through taxonomic inventories as well as athe exploration and collection of deep-water species (involving depths of up to 1,000 metres).

Table 1 KNOWN MARINE BIODIVERSITY OF THE GALAPAGOS

GROUPS	TOTAL NO. OF SPECIES	NO. OF ENDEMIC SPECIES	ENDEMISM PERCENTAGE	QUALITY OF SPECIES **	LEVEL OF STUDY
Mammals	24	2	8.3	High	Moderate
Algae's	333+	130*	39.0	High	Poor
Marine Birds	19	5*	26.3	High	High
Fish	447+	51*	11.4	High	Poor
Soft Depths	390	?	?	High	Poor
Polychaetes	192	50	26.0	Intermediate	Poor
Brachyurans	120+	23	19.2	Intermediate	Poor
Carideos and Estenopods	65+	10	15.4	High	Poor
Porcelantes	12+	1	8.3	Low	High
Crustaceans	18+	4	22.2	Low	High
Molluscs	800+	141	17.6	Low	Poor
Opisthobrachyurans	49+	18	36.7	Low	Poor
Echinoderms	200+	34	17.0	High	Poor
Bryozoans	184	34	18.5	High	Poor
Gorgonians	12	8	66.7	Low	Poor
Corals	44	20	45.5	Low	Moderate
	2909^	**531**	**Average 25.2% Total 18.2%**		

+ Taxonomic groups of new registrations or species not included in this table * insular endemism **Related to other insular areas of the Pacific Ocean

The principle marine habitats of the Galapagos Marine Reserve are rocky depths with vertical rocky walls, sandy beaches, mangrove swamps and, in a limited form, coral reefs. There are also costal, beach and sand vegetations which have high levels of endemism as well. In addition, there are costal lagoons, wetlands, and interchange zones of fresh and marine water in which are more unique species to be studied. The natural phenomena that affect the submarine communities of the Galapagos are the aflorimentations of cold water to the West of the archipelago and the El Nino phenomenon. The currents are generally strong (between 3 and 7 knots) and the sea conditions are colder than usual at a tropical latitude. Moreover, the Galapagos has a strong southern characteristic which according to oceanographic patterns results from a location between 10 and 20 degrees of South Latitude. The arrival of currents from distinct origins (some of which are cold, some hot), with strong annual and interannual variations has created internal waters in an insular region which are separated into distinct units due to different temperature patterns throughout the whole archipelago.
Figure 1 40 nautical miles Zone 1 mixed, Zone 2 cold, Zone 3 warm, Zone 4 mixed, Zone 5 Cold.
The Zonification of Figure 1 was proposed by Michael Harris in 1969. It identifies 5 zones relating to ocean surface temperature. Studies made by other scientists (P. Glynn, G. Wellington and G. Reck in 1983, 1985 and 1986 respectively) have contributed to this zonification. Other contributions have come from studies carried out by the Area of Marine Investigations and Costal Conservation departments of the Charles Darwin Research Station. These investigations have corroborated the quantities of the majority of fish and invertebrates presenting a pattern of distribution which coincides with the biogeographical zonification proposed by M. Harris in 1969. This peculiarity of the Galapagos has made its biodiversity especially unique and valuable for science and humanity. To this day, no places have been found in which such separate biota markers and systems can be seen in such a small geographic area; there are 5 separate biogeographical units located in distant that lie only 10s of miles apart.

1. KEY RELATIONSHIPS

The mangrove swamp areas are aggregation zones of various crustaceans, molluscs and fish species. They also serve as shelter and nesting zones for different marine and terrestrial bird species which are unique in the world such as the Mangrove Finch. In the Western zone of the archipelago cold waters from the Central Pacific are found. These are rich in nutrients and generate a high primary productivity level which is the principle base of the tropic food chain. This high primary productivity feeds a great number of basic species. These are key elements in ensuring high diversity of fish species and other species of higher tropic levels.
The interaction between marine iguanas and marine algae is very important for vegetation diversity and biomass. The marine iguanas are reptiles who are unique in the world and who feed on marine algae. In the external zones of the archipelago, surrounding the bajos, certain key oceanographic conditions are found. These generate high production levels and are feeding zones for birds and marine animals who travel many kilometres to feed from these zones.

2. ENVIRONMENTAL TRANSFERS

In the Galapagos, as in the rest of the world, the oceanic ecosystem plays a vital role in different natural cycles. 84% of water stored in the atmosphere comes from sea

evaporation. When conditions are optimal, this water vapour condenses and falls as rain. In the photosynthesis process, marine algae retain carbon and releases oxygen. This is one of the main production sources of oxygen. This process makes the ocean an absorbing substance, a buffer zone for excess carbon dioxide in the atmosphere. Furthermore, physiochemical transfers exist between land and sea including, among others, the transfer of nutrients and sediment flows. In the Galapagos, no examples of peculiar or unique conditions of these processes have been detected which differ from examples in other global oceanic ecosystems.

3. SPECIAL ECOSYSTEMS

3.1 WEST OF THE GALAPAGOS ISLANDS (BOLIVAR CANAL AND FERNANDINA ISLAND)

A zone of huge importance for the endemic species as it is a zone rich in nutrients due to aflorimentations from the Equatorial and Cromwell Sub currents. 50% of the fur seal population (Arctocephalus Galapagoensis) live in this zone. These fur seals are a Galapagos endemic species. They feed to the west of the islands at a distance averaging 20km. They have been sighted at distances of up to 60km west of Fernandina. The Western and Southern zones of the archipelago constitute aggregation areas for feeding for three other marine mammal species. These are Bryde's Whales (Balaenoptera Edeni), Pilot Whales (Balaenoptera Globicefala) and the Bottle Nose Dolphin (Tursiops Truncatus). The presence of these species in the Galapagos has resulted in the recognition of the islands as a Whale Sanctuary.

4.2. DARWIN AND WOLF

Tropical benthonic ecosystems. These islands are the location of the best representation of coral reefs in the archipelago with over 8 different species of haematitic coral. The islands also hold the most diversity of tropical fish species in the archipelago.

4.3. MARCHENA, FLOREANA, ESPANOLA

Coral reefs and endemic birds. The Blue Footed Boobies use the Bajos as feeding areas, especially the colonies which inhabit Espanola. The distribution of these birds is limited to a number of islands in the East Pacific between Mexico and Peru. The Galapagos is the biggest nesting zone of this species in the world. Furthermore, 99.9% of the Galapagos Albatross population also nest on Espanola. Consisting of some 15,000 pairs, these bird colonies fish around the Bajos.

4.4. BAHIA CARTAGO – ISABELA

The oldest mangrove forest of the archipelago.

4.5. SOUTH ISABELA

The biggest marine turtle-nesting zone in the Galapagos. The most important lagoons and wetlands of the archipelago.

4.6. OCEANIC ISLANDS

As the only insular oceanic system of Ecuador, the Galapagos has special and unique ecosystems.

4.7. THE 'BAJOS'

In the external limits of the Galapagos platform. Principally to the south, southeast and east zones are underwater mountains or volcanoes which have risen to a depth of around 100 metres. They are surrounded by waters of between 2,000 metres and 4,000 metres. These Bajos generate particular oceanographic conditions (local aflorimentations) which are of great importance for the existence and survival of birds and mammals which are native and endemic to the Galapagos Islands. These Bajos are the principle feeding zones for a number of terrestrial (seals, birds, turtles) and marine (tuna, sharks) species. They have been progressively and continually diminished by industrial commercial fishing activities and operations (circular nets and long-line fishing techniques).

5. NEW BOUNDARIES FOR THE GALAPAGOS MARINE RESERVE

For many years, it was believed that the marine fauna of the Galapagos were restricted and concentrated in costal areas. It was also asserted that the main and migratory species (sharks, whales and dolphins) used open waters to a very limited degree. In the case of benthonic surface species, however, the majority of the species of most importance for Galapagos tourism (birds and marine mammals) are highly mobile and their range of habitat extends past costal and interior water zones of the archipelago. As a result, the biodiversity of the Galapagos ecosystem stretches to and joins with the submarine platform of the Galapagos and its deep and circulating waters.
The protection of marine ecosystems of the previous Reserve of Marine Resources of the Galapagos (RRMG) was insufficient and poor as it did not include sufficient superficial pelagic elements of the ecosystem: these being the Bajos. The principal biological criteria for the extension of 40 miles to the protection zone were for the conservation and management of the Bajos. These are submerged geological structures located between 20 and 40 miles from the Base Line which form part of the Galapagos Marine platform. Surrounding these underwater structures are oceanographic conditions of high productivity which are favoured by marine life. As a result, there are continual significant feeding aggregations of birds, fish, mammals and reptiles which interact directly in these surface pelagic ecosystems of the Bajo areas. 100% of the terrestrial vertebrates present at these aggregations are species which are native and endemic to the Galapagos (Booby, Albatross, Pelican, Seal, Frigate, Gull). These areas were not sufficiently represented or considered in the 15-mile zonification of the previous RRMG. It was thus necessary to extend the limits of the Marine Reserve to a 40-mile zone. In an indirect way, the Sub secretariat of Fishing has been lawfully protecting a 40-mile zone (such as surrounds the Galapagos) as a front of the Ecuadorian coast from the strong fishing exploitation of foreign fishing boats associated with the Ecuadorian Navy. The arguments used for increased protection since 1992 have been related to the huge impact to marine ecosystems that have been caused by these highly sophisticated and equipped boats with high fishing capacities. The limit expansions permit the long-term protection of the Bajos and their biodiversity. Additionally, studies and investigations of activities of rational use which occur in these areas help to determined

the role of these ecosystems in the functioning, establishment and viability of conservation of the Galapagos Marine Reserve.

The incidental fishing of by catch of marine birds, turtles and mammals which have been occurring around the Bajos represent one of the greatest threats to the communities of species which use the Bajos as feeding areas. This occurs mostly as a result of long-line and enclosed circular net fishing. Those fishing activities which threaten the survival of Galapagos costal species (which are the economic base for tourism) generate diverse long-term problems for the economy of Ecuador. Other problems include frequent shark fishing by industrials with specific objectives and the capturing of rays and marine turtles as a result of incidental fishing - a by-product of industrial fishing activities. The common marine turtle of these areas is Chelonia Mydas. This is a species which in the Galapagos has the highest populations and most nesting areas than in any other area across the Pacific and throughout the world. Sharks, rays and turtles, as well as birds and mammals are the economic bases of the increasing underwater tourism of the Galapagos. In particular, sharks are predators of a high tropic level (as are birds and seals) which form important links within the marine ecosystem. Their absence of significant decrease would have harmful consequences for the long-term existence and productivity of the Galapagos ecosystems. Industrial fishing and incidental fishing, thus both directly and indirectly affect this species in a negative way. In only the south and southeast islands (Floreana, Espanola and San Cristobal) 30% of the Galapagos sea lion population is found. This is a population which depends on the Bajos for food. In the South-Central area of the archipelago, more than 48% of sea lion and human use interaction are caused by fishing. Most of these cases result in sea lion fatalities. Furthermore, reports have been made that some fishermen have caught up to 5 Albatrosses and more that 15 Boobies in a single day's fishing.

The increasing continental fishing activity has resulted in unknown mortality levels of endemic and native Galapagos species. However, the artisan fishing community of the Galapagos has coexisted with this problem for many years and has been trying to minimalism the effects. Only the exclusive use and access of the Bajos to local fishermen would guarantee a realistic compromise between local users and protection of these valuable animals (birds, reptiles, fish and mammals) and the biological diversity of the Galapagos.

These Bajos and their surround waters hold great economic importance for Galapagos fishermen as they maintain quantities of species of high economic value such as tuna and half-beaked fish. The Bajos have been indiscriminately exploited by artisan and industrial fishing boats from the continent which are impossible to control or manage as they enter and leave the permanent zones. On the other hand, the Bajos represent new fishing zones for Galapagos fishermen who have long-term interests in the area and who represent a definitive group. This group is small and consciences and tryst to use these areas rationally. The controlled and exclusive areas to the Bajos to Galapagos fishermen decreases fishing pressure and use of costal zones of the Galapagos Marine Reserve where a huge biological diversity representing the economic and ecological base of the Galapagos is found.

APPENDIX IV

TRANSCRIPT OF ARTICULATED TEXTS QUOTED IN THE LEGAL FRAMEWORK FOR MANAGEMENT OF THE GALPAGOS MARINE RESERVE

1. POLITICAL CONSTITUTION OF THE STATE

TITLE III
RIGHTS, GUARANTEES AND DUTIES
CHAPTER 2
CIVIL RIGHTS

Article 23.- Without undermining or harming rights established in the Constitution or by prevailing international documents, the State recognises and guarantees the following to the people:

1. Inviobility of life. There is no death penalty.
2. Personal integrity. Cruel penalties, torture, all inhuman or degrading procedures which imply physical, psychological or sexual violence or moral coercion as well as the application and use of unauthorised human genetic material are prohibited. The State will adopt necessary measures and methods to prevent, eliminate and sanction violence against children, adolescents, women and elderly people. The actions and penalties for genocide, torture, kidnap, forced disappearance of persons and homicide for political or conscience reasons are unprescribed. These crimes are not susceptible to exemption or amnesty. In these cases, the obedience to superior orders does not exempt responsibility.
3. Equality before the Law. All people are considered as equal and possess the same rights, liberties and opportunities. This is without discrimination of nationality, age, sex, ethnic origin, colour, social origin, language, religion, political opinions, economic position, sexual orientation, health condition, disability, or differenced of any other nature.
4. Freedom. All people are born free. Slavery, servitude and trafficking of any human beings are all prohibited in all forms. No person may be imprisoned for debts, expenses, taxes, fines nor other obligations (with the exception of increased grants schemes). No person may be obliged to do anything prohibited or to stop doing something unprohibited by the Law.
5. Right to freely develop individual personalities without limitations other than those of judicially ordained taxes and remaining rights.
6. Right to live in a sanitary environment with ecological equilibrium and free from contamination. The Law establishes restrictions on the exercising of certain rights and freedoms in order to protect the environment.
7. Right to the availability of public and private goods and services of optimal quality. These should be chosen at liberty having received accurate and true information about their contents and characteristics.
8. Right to honour, good reputation and personal and family privacy. The Law protects names, images and voices of the people.

9. Right to freedom of opinion and expression of thought in all forms by any means and methods of communication without harming or acting against responsibilities laid out in the Law. Any person affected by unproven or inaccurate claims or whose honour is harmed by inaccurate or untrue information or publications in the press or through any other social communicational media has the right to have these corrected by obligatory, immediate and free means in the same space or time as the slanders to be rectified were broadcast or published.
10. Right to communicate and to set up social communication medias and to access on equal conditions to television and radio frequencies.
11. Freedom of conscience and freedom of religion expressed privately or publicly in a collective or individual form. Individuals may freely practise and teach worship with unique limitations that the law prescribes to protect and respect diversity, pluralism, security and rights of others.
12. Domestic Inviobility. No person may enter nor carry out inspections or registrations of a home without the authorisation of the homeowner or of a judicial order (cases and methods of which are established in the Law).
13. Inviobility and privacy of correspondence. Correspondence may only be retained, opened and examined in cases foreseen by the Law. Subjects and matters foreign to the reason for examination will remain confidential. The same principal is applied to any other form of communication.
14. The right to travel freely across national territory and to chose place of residence. Ecuadorians are free to leave and enter Ecuador at liberty. In the case of foreigners, they are at the disposition of the Law. The prohibition to leave to the country may only be ordained by a competent judge and according to the Law.
15. Right to submit complaints and partitions to the authorities but in no case under the name of the common people and to receive the appropriate attentions or replies in adequate time.
16. Freedom of enterprise subject to the Law.
17. Freedom to work. No person can be obligated to carry out forced or unpaid work.
18. Freedom of contract subject to the Law.
19. Freedom of association. meeting and gathering with peaceful aims.
20. Right to a quality of life that includes health, food and nutrition, drinkable water, sanitary surroundings, education, work, employment, recreation, housing, clothing and other necessary social services.
21. Right to hold political and religious beliefs and convictions in secret and reserved. No person may be obligated to declare his or her own beliefs. In no circumstance may information about third party political or religious beliefs be used. Nor should data referring to health or sex life be used apart from to comply with medical requirements.
22. Right to participate in cultural community life.
23. Right to ownership according to terms of the Law.
24. Right to freely take responsibilities and decisions relating to sexual life and activities.
25. Legal security.
26. Right to fair and due legal process without delay.

TITLE III
RIGHTS, GUARANTEES AND DUTIES
CHAPTER 5
COLLECTIVE RIGHTS
SECOND SECTION
ENVIRONMENT

Article 86.- The State will protect the right of the population to live in a sanitary environment with ecological equilibrium guaranteeing a sustainable development. The State will oversee that this right does not affect the preservation of nature and will guarantee native preservation. This is declared according to public interest and will be regulated according to the law:

1. Preservation of the environment, conservation of ecosystems, biodiversity and integrity of genetic heritage of the country.
2. Prevention of environmental contamination. Recuperation of degraded natural and native species. Sustainable management of natural resources and requisites according to which, these aims must include public and private activities.
3. The establishment of a national system of areas of natural protection which guarantee conservation of biodiversity and maintenance of ecological services conforming to international treaties, agreements and conventions.

Article 91.- The State, its delegates and concessionaries are responsible for environmental damage according to the final clauses of Article 20 of the Constitution. Prevention measures will be taken in cases of doubt over impact and negative environmental consequences of any action or neglect. This remains the case, even if there is no actual scientific evidence of harm being caused. Without impinging on the rights of those directly affected, any native or legislated individual or human group may enforce the Law in order to protect the environment.

TITLE Xl
TERRITORIAL AND DECENTRALISATION ORGANISATION
CHAPTER 4
SPECIAL REGIMES

Article 238.- Special regimes of territorial administration are established which include demographic and environmental considerations. In order to protect areas of special regime limits are to be made on the rights of internal migration, work or any activity which may affect the environment. The Law legislates each special lifestyle of the regimes.

The residents of the respective area who are affected by limitations of Constitutional rights will be compensated for this by being granted preferential access to the benefits of available natural resources and the formation of associations to safe guard family welfare and inheritance. Each sector will be regulated according to regulations and laws established in the Constitution and the Law.

The Law may create metropolitan districts and may also regulate any special organisations. Preference will be given to construction, works and services in areas of relatively less development especially in cases of neighbouring provinces.

Article 239.- The Galapagos Province is one of a special lifestyle regime. The Galapagos National Institute will be in charge of provincial planning, will approve budgets of dependent and autonomic departments of the regime and will control their implementation. This will produce an integrated advisory board presided over by the Governor and including other members such as the Mayor, the provincial prefects, scientific and technical representatives of the area as well as other individuals and institutions as permitted in the Law.
Provincial planning carried out by the Galapagos National Institute will rely on technical and scientific assistance and on the participation of dependent and autonomic departments of the regime. This participation will be unique and obligatory.

2. LAW OF SPECIAL REGIME FOR THE CONSERVATION AND SUSTAINABLE DEVELOPMENT OF THE GALAPAGOS PROVINCE

PRELIMINARY TITLE
Article 2.- BASIC REGULATIONS FOR THE ESTABLISHMENT OF POLICIES AND THE PLANNING OF THE GALAPAGOS PROVINCE

The establishment of policies, planning and execution of public and private construction work in the Galapagos Province and the area constituting the Galapagos Marine Reserve are regulated by the following principles:

1. The maintenance of the ecological systems and biodiversity of the Galapagos Province's special native and endemic wildlife. While at the same time allowing foot the continuation of the natural evolutionary process of these systems with a minimal human interference. This should particularly allow for isolated genetics both between the individual islands and the islands with the continent;
2. The sustainable development and control of the support training framework of the Galapagos Province;
3. The privileged participation of the local community in developments and improvements of a sustainable economy within the islands' ecosystems. This should fundamentally incorporated special models of production, education, training and employment;
4. Reduction of risks of introduced diseases, pests and foreign plants and animals to the Galapagos Province.
5. The quality of life of the Galapagos Province residents should correspond to and work in conjunction with the exceptional characteristics of Human Heritage Sites.
6. The recognition of existing interaction between inhabited zones and protect terrestrial and marine areas and the resulting necessary integrated management; and
7. A precautionary principle to be applied towards construction work and other activities which may harms the environment and ecosystems.

Legislative bodies deriving from this Law require scientific and technical assistance to ensure environmental protection, conservation of natural resources and sustainable development.

CHAPTER 6
PROTECTED AREAS OF THE GALAPAGOS PROVINCE
PARAGRAPH 1
THE GALAPAGOS PROVINCE MARINE RESERVE

Article 12.- The Marine Reserve of the Galapagos Province falls under the category of Marine Reserve of Multiple Use and Integrated Management according to the classification titles of the legal reforms of this Law. The integration of the Marine Reserve incorporates the entire marine area within an area of forty nautical miles stretching from the Base Line of the archipelago as well as the interior waters according to Executive Decree no. 959-A of the 28th June 1997, Official Record no. 265 of the 13th July 1971.

Article 13.- INTERINSTITUTIONAL MANAGEMENT AUTHORITY

The Interinstitutional Management Authority consists of the following members:

1. Minister of the Environment or delegate who presides;
2. Minister of Defence or delegate;
3. Minister of Commerce, External Commerce, Industrialisation and Fishing or delegate;
4. Minister of Tourism or delegate;
5. Chamber of Tourism of the Galapagos Province
6. Artisan Fishing Sector of the Galapagos Province; and
7. Sector of Conservation, Science and Education of the Galapagos Province.

This is to be officialised by the Technical Secretary of the Board of the Galapagos National Park.
The alternating and principal members of the Commission should be representatives of respective institutions and must also hold permanent residency of the Galapagos Islands.

Article 14.- Functions of the Interinstitutional Management Authority are the following:

a) To establish policies for the Galapagos Marine Reserve sustained by principles of conservation and sustainable development.
b) To approve the Galapagos Marine Reserve's Management Plan for Conservation and Sustainable Use;
c) To monitor the fulfilment and implementation of the Plan;
d) To distribute assigned resources to the Galapagos Marine Reserve and any other necessity for management priority of the Reserve Zone;
e) To convey requirements to public and private institutions when their participation is considered necessary;
f) To approve volumes, dimensions, species, methods, tools and calendars for permitted fishing in the Galapagos through contact with the National Advice Association for Fishing and Fishing Development; and
g) To authorise participative studies of scientific investigation aimed to improve conservation and development policies for marine fishing.

Article 14.- ADMINISTRATION AND MANAGEMENT

The Board to the Galapagos National Park controls the administration and management of the Galapagos Marine Reserve and excercises jurisdiction and competence over the Management of natural resources.
For effective control, scientific investigation and surveying activities are coordinated with competent private institutions who are involved with the Marine Reserve. At the base of this coordination lies the functioning Management Plan and interinstitutional conventions which are subscribed to this. The Subsecretariat of Fishing Resources and the National Navy are responsible for assigning inspectors and personnel conforming to the Management Plan. These serve to control the Galapagos Marine Reserve.
The Board of the Galapagos National Park serves to coordinate the extension and supervision of management plans, conservation and sustainable use of the Galapagos Marine Reserve. It also controls other policies and planning instruments which are extended according to principles of participative management. These are considered and approved according to advice and counsel supplied by INGALA. The Management Plan of the Galapagos Marine Reserve defines alliances and levels of local participation and responsibility of user groups. These user groups are duly organised by the Participative Management Committee (JMP).

Article 16.- AREA OF SPECIAL PROTECTION

Establishment of a special protection area measuring a minimum of 60 nautical miles from the Base Line. This area is to regulate transportation of high risk or toxic products across this zone. The area may be increased according to international agreements and scientific investigations which have been carried out to this effect.

TITLE VIII
REFORMS AND REPEALS

Article 72.- Reforms and repeals of the following legal documents:

a. Law of Forestry and Conservation of Natural Areas and Wildlife

To the end of Article 109 of the Law of Forestry and Conservation of Natural Areas and Wildlife, the following paragraph has been added:

“Marine Reserve – created within the National Heritage of Protected Natural Areas under the category of Marine Reserve. The Marine Reserve is a marine area, including the surrounding water, seabed and subsoil. Contained in these are predominant and unmodified natural systems. The management objectives of these areas are to guarantee long-term protection and maintanence of the biological diversity while simultaneously proportioning a sustainable flow of natural products, services and uses to the benefit of the local community. Being subject to various jurisdictions and uses, the declaration of Marine Reserves should be consistant with prior consents from related authorities of jurisdiction.The different grades of participation should be consistant with corresponding Manangement Plans”.

3. REGULATION OF THE LAW OF FORESTRY AND CONSERVATION OF NATURAL AREAS AND WILDLIFE

TITLE II NATURAL AREAS AND WILD FLORA AND FAUNA
CHAPTER 1
NATURE LAWS

Article 201.- The Management Plan contains:

a) Basic and essential information;
b) Area inventories;
c) Limit and boundary checks;
d) Area objectives;
e) Zonfications;
f) Programs of protection and management of resources, environmental education, investigation, surveying, scientific cooperation, administration and maintanance.

4. LAW OF CREATION OF ECUATORIAN INSTITUTE OF FORESTRY, PROTECTED AREAS AND WILDLIFE (INEFAN)

CHAPTER 1
NATURE, OBJECTIVE, DURATION, RESIDENCE AND FUNCTIONS

Article 2.- INEFAN is the executive body to which the implementation of the General Rule of Application (as well as other related legislation and rules of forestry resources, natural areas and wildlife) has been awarded by the Ministry of Agriculture and Livestock through the Law of Forestry and Conservation of Natural Areas and Wildlife.

5. SPECIAL LAW OF TOURISM DEVELOPMENT

CHAPTER 1
TOURISM IN NATURAL AREAS

Article 37.- Tourism activity within natural areas (whether legislatively protected or not), national parks and reserve zones is programmed, controlled, authorised and supervised by INEFAN in collaboration with the Ministry of Tourism and conforming to the General Rule. This includes the establishment of specific zones to confine tourist activity to well defined areas. These zones are usually public use zones according to a process of territorial legislation as reflected in the Management Plans of each respective area.
Touristic use is controlled according to the criteria of protection, conservation, approved sustainable resource use and education concerning the ecosystem of each area. Tourism activities are prioritised and orientated around nature and do not follow patterns of massive and traditional tourism within these areas.

APPENDIX V

GLOSSARY

Aflorimentation: Rise of deep water which is rich in nutrients. This ascent is caused by regular wind action.
Agregation: Gathering of individuals with a specific goal such as feeding or reproduction.
Atarraya: Type of fishing net which is manually cast into the sea.
Base Line: Imaginary line serving as a measurment reference point. It marks one of the most external points outside the archipelago.
Bajo: Underwater geological structure (volcanoe, mountain, hill) which has a lesser depth than that of surrounding waters.
Biodiversity: Biological diversity which is contained in a particular ecological system (ecosystem, community, agregation, habitat).
Biophysics: Application of physics in the study of living organisms and systems.
Biogeography: Study emalgamation of Biology and Geography which studies and analyses geographic distribution of plants and animals and their cause and effect relations over periods of time.
Biological Reserve: : Area of variable extension found in any environment; terrestrial or aquatic. These areas are allocated in order to preserve wildlife.
Bioprospection: Search for biological material and bioative components and substances for pharmaceutical, medical or industrial use.
Biosphere Reserve: Category of maximum management which includes areas of Natural Heritage for Humanity Sites and national parks.
Biota: All species of plants and animals that are found in ecological systems.
Buffer Zones: Physical space zones established to forsee, prevent, mitigate and correct the effects of one activity on another.
Cargo Capacity: Planning tool which measures frequency and intensity of use of an area through its particular natural characteristics. This is to maximise protection of ecosystems and to guarantee the continuation of evolutionary and ecological processes.
Consensus: Unanimous. Agreement or consent of all members of a given group.
CPUE (Capacity for United Effort): Means of fishing management which measures quantity (biomass and individual numbers) of captured resources in one effort unit.
Crater: Volcanic cones formed by volcanic ash.
Cuter/Yacht: Wooden boat with an enclosed area, one mast and a hold. Autonomy of 5 to 10 days. Powered by a sail or an onboard motor. Lengths measuring from 10 metres long.
Divemaster: Qualified diver with an international certificate and a high level of experience of at least 50 dives.
Ecology: Science which studies relationships between living beings and their surrounding environments.
Ecosystem: Community of organisms and plants which interact as a unit in a given area.
El Nino: Natural atmospheric event wihc alters normal oceanographic and climatic conditions. It is characterised by low atmospheric pressure, high rain fall, increase in sea levels and temperatures as well as changes in normal wind and current patterns.
Endemic: Animal or plant which exclusively exists naturally in a determined place or habitat to which it is entirely unique.

Evolution (General): Natural tranformation processes which occur in species over a period of time and generations.
Facilitator: Individual trained to lead meetings, organise programs, resolve conflicts, mediate and produce consensuses in group situations. This person works for a determined amount of time.
Fibra: Fibre glass boat without any cover. High distance capacity with a small hold and a compartement in which tools may be stored. Lengths ranging from 6, 5 and 9 metres long. Powered by an onboard motor.
Genetic Isolation: Different hereditary traits in a species which prevent it from mixing with other species.
Global Positioning System (GPS): Instrument connected to a satelite which determines exact locations of point on the planet.
Guild: Organisation which unites members of the same profession or office group. They are regulated by special statures.
Intrinsic: Essential faculty of a thing or idea.
Local University: University which has extensions, faculties of schools in the Galapagos with resident alumni. Based on a model of personal or distanced assistance.
Marine Invertebrate: Sea animal with no bones or backbone such as sea cucumber, octopus.
Management: Implementation of planned activities to perform basic objectives in the protected marine area. Projects to be managed include: studies, planning and implementation of plans and programs in a legitimately protected area.
Marine-costal Environment: Zones located between marine and terrestrial ecosystems. These include environments, habitats and species which are present and dependent on this area. Examples of these areas are; intertidal, estuaries, mangrove swamps, costal lagoons and sand dunes.
Magma Mass: Material from the earth's mantle which emerges as liquid rock and then hardens. It is known as lava when it first rises to the earth's surface.
Maximum Sustainable Yield: Concept which defined resource quantities to be extracted in such a way as to ensure their rejuvination, recuperation and maintanance.
Native: Natural animal or plant which is native but not exclusive to a determined location.
Natural Heritage for Humanity: Natural locations consisting of physical, biological or group formations of exceptional global importance and value. These values are according to science, conservation and natural beauty. The locations of these sites are included in the Heritage List established by UNESCO.
Panga: Wooden boat similar to a canoe. Powered by a rudder and oars. Ranging in size from 4 by 5 metres and 7 by 2 metres. Also equipped with a motor. Small distance capacity.
Pelagic: Species found in midwater depths in the ocean.
Specie Diversity/Quantity: The quantity of a given species in a given area.
Sustainable Use: Rational use of a resource which does not compromise or threaten the existance and survival of the resource in future generations.
UNESCO: United Nations for Education, Science and Culture Organisation.
User: Anyone who uses and holds long-term interest in the Marine Reserve. These uses and interests may be of a commercial or scientific nature.
Zonification: Division into sectors of certain land or sea areas. These zones hold specific proposals, legislations and activities.